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Tiny Terminal Goes Where The Action Is

DALLAS – A new 5 lb. portable remote terminal transmits keyed, credit card generated, or magnetic tape input to computers via any convenient telephone – and then amplifies the computer's audio response so that the user can hear it clearly.

The first EDS systems, which are marketed by Electronic Data Systems Corp. and rent for about $32 a month, will be delivered next summer, according to the inventor, Earl D. Spreaker. Spreaker told *Computerworld* that he believed that high accuracy would be possible using spoken responses, as these would be understandable to housewives, truck-drivers, or even children.

Security Problems

Spreaker said the terminal could provide high security as the user does not always need to know the number of the telephone being called. A 'Call' option can be fitted to the terminal which allows a predefined number stored in a removable cell to be dialed at the touch of a button. However, the telephone company pointed out that this security might not last long, as there are currently no long distance collect call facilities which bypass the operators, and that when a prepaid long distance call is placed, the number called is printed out on the monthly bill.

The system is compatible with IBM, Honeywell, and other major computer systems which have audio response capability. The manufacturer recommends it for salesmen calling in orders, handling credit checks, etc.

Large Users Sought

Spreaker said that EDS was looking for large orders rather than individual ones and that a number of businesses – such as oil, automobile, and finance companies – were showing particular interest.

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No Extension

It was erroneously reported in the Nov. 13 issue of *Computerworld* that IBM had decided to extend program maintenance of OS 360 Release 14 until June for those MFT users who wanted to continue to use the Check Point/Restart facilities.

Program maintenance for Release 14 will only be provided until the end of November. IBM says no extension is contemplated.

Check Point/Restart facilities, dropped in Release 15/16, will be made available next June in later versions of OS 360.

Fortran Is Used Throughout New Time-Sharing Service

Special to Computerworld

ANN ARBOR, Mich. – Fortran IV users were offered a way into the time sharing age without changing languages when a new software system went operational last week on the SDS 940 at ComShare. The new system, Xtran, includes almost all of the standard Fortran IV familiar to many programmers and also provides facilities for both input time (i.e., during debugging) and object program time. This means that Fortran programmers can write programs suitable for time sharing by providing conversational dialogs between a user and a program.

Ron Jeffries of ComShare told *Computerworld* that a typical use would be a statistical evaluation program. "The programmer can include in his instructions details of the dialog he wants the program to use to help people make use of the statistical evaluation," Jeffries said. Often these evaluation programs are called up by nonmathematically oriented users who may have difficulty with the input or in understanding the output. Many of these difficulties can be overcome by a suitable dialog at object time, and with Xtran these dialogs can be programmed into the system.

Another advantage of the Xtran compatibility seen by ComShare is that a Fortran IV programmer can write his programs on the time shared system and run them on any computer that has a standard Fortran IV. "And that is practically all systems from IBM onwards," said Jeffries.

"We know we are more effective than batched operations for debugging and elementary program checkout," he pointed out, "and with the use of a compatible language such as Fortran IV, we feel that many dollars can be saved." But he acknowledged that currently few people have started to use this mode of operation.

Fortran IV Superset

"Our goal with Xtran has been to produce a USASI Fortran superset with extensions which facilitate the use of Fortran in a time sharing environment, and which allow the user ready access to most of our advanced system features, such as random disk accessing," he said.

Technical details of Xtran appear on page 12.

Brooks, Gallagher Returned to Congress

By Leete Doty
CW Associate Editor

WASHINGTON, D.C. – Congressmen Jack Brooks, D-Texas, and Cornelius E. Gallagher, D-N.J., both deeply concerned with computers, have been returned to Congress by their constituents.

Two CW Readers Defeated

Chandler H. "Harry" Stevens, a systems analyst and a Massachusetts state representative [CW, Oct. 2], was defeated in his bid for a congressional seat as an independent.

Ralph E. Judd, also a systems analyst and the only other EDP person *Computerworld* knew to be running for an elective office [CW, Oct. 30], failed in his bid for a seat on the 26 member Wayne County [Mich.] Board of Supervisors.

Judd, who told *Computerworld* that people should run computers and not vice versa, said that he "would probably like to run again" for office. Judd said he was interested in getting computer people more interested in politics and society, and that he plans to work towards establishing "how we can best use the computer while still safeguarding the individual's rights."

Brooks, who has been campaigning for more efficient use of computers by the government, is chairman of the House Government Operations Subcommittee, which is studying this area.

With the House remaining Democratic, Brooks is almost certain to keep his chairmanship, but how effective his committee will be in dealing with Richard Nixon's Republican administration remains to be seen.

Gallagher has been exerting his influence to prevent the establishment of a national computerized data bank.

IBM Again Stresses Cost of Reliability

BOSTON – An IBM sponsored speech directed to the problems and costs of reliable computer operation was given here last week by members of the IBM System Development Division. In a paper for the Northeast Electronics Research Meeting, Lucian J. Endicott, Jr. and Harold G. Markey emphasized that computers were moving into the communication networks, and that they had not been adapted to provide satisfactory operations in that environment. Endicott and Markey said that it was necessary to "adapt to the requirements of this type of operations and somehow convince our users to accept the higher costs involved."

Willingness to Pay More

The speech followed by a week another one that also brought out the user's willingness to accept higher costs for more reliable operation. IBM President T.V. Learson, speaking before the joint Share/Guide meeting in Atlantic City, said that the willingness of the user to bear higher costs was one of the major factors involved in providing reliable systems.

Reliability appears to be a greater problem with present day systems than was anticipated when the systems were originally announced. At the 1964 debut of the IBM 360 line, major stress was laid on the availability of special hardware, including the diagnose instruction which was supposed to provide for simple and safe operation by being able to recover from transient errors. Recently, however, a number of events have pointed to the fact that the 360 line is proving harder to maintain than had been anticipated.

This summer IBM refused the U.S. Government request to increase the minimum "up-time"

(Continued on Page 2)

Katzenbach Named IBM General Counsel

WASHINGTON, D.C. – Nicholas deB. Katzenbach, under secretary of state, resigned last week after an exchange of letters with President Johnson. In an almost simultaneous announcement, IBM Corp. announced his appointment as general counsel.

In his letter of resignation to the President, Katzenbach said that he wanted to quit at Mr. Johnson's pleasure, but that he wanted his intentions made public so that he could make plans for his future. The IBM announcement said that he would take up his new position about the first of the year.

Follows Ex-Colleague

Previous to his position in the State Department, Katzenbach had been attorney general and a professional law officer in the Justice Department. He will replace another ex-Justice Department officer, Burke Marshall, as general counsel for the IBM Corp. Marshall will move to a senior management position within IBM.

Civil Rights

Marshall and Katzenbach both came into national prominence during the civil rights struggle in the early 1960s when they represented the Justice Department in various legal cases. Katzenbach's appointment as attorney general followed a long trial period as "acting attorney general" which was, at the time, ascribed to President Johnson's worries about Katzenbach's Kennedy connection.

The President's letter accepting Katzenbach's resignation referred to his move from the Justice Department to take the position of under secretary in the State Department at a cost of his cabinet post. The letter said, "Few men have been so deeply involved in the critical issues of our time. Your selflessness in leaving the cabinet to assume the duties of under secretary of state was a testament to your character that I shall never forget."

A spokesman for the Justice Department told *Computerworld* that the timing of the IBM announcement, which was almost simultaneous with the White House release of Katzenbach's resignation, had been speeded up because Katzenbach's position was already known to IBM personnel, and there was the possibility of a leak in the corporation.

Katzenbach will be elected a vice president of IBM when he takes his new position at the beginning of the year.

Election Postmortem Fails to Find Problem

By a CW Staff Writer

NEW YORK – A week after the polls had closed Nov. 5, computer experts were still pouring over data here in an effort to determine what had caused the computerized tabulation of election returns to go bad.

"I am quite certain that the difficulty was in the programming," said J. Richard Eimers, executive director of the News Elections Service, (NES), as he clearly absolved the IBM 360/40 involved of any blame. NES was a cooperative organization formed by major news media to insure a single set of accurate election totals.

Officials at Programming Methods, Inc. – the firm that did the actual programming and had certified the equipment ready following 12 hours of testing the day before – identified the area of trouble as that part of the program dealing with the number of precincts reporting.

Unexpected Circumstances

The exact cause of the trouble may never be known. Some experts feel that the trouble developed because an unexpected set of circumstances occurred that the program was not prepared to handle. One such case came to light three days after the election when it was discovered that some 50,000 votes cast for Hubert Humphrey in Alabama had not been included in the national popular vote totals – apparently because the votes were credited to a recently formed party.

PMI officials told *Computerworld* that while the test data was simulated returns rather than actual returns from previous elections, the volume of the test data was heavier than the actual volume of data received.

The faulty system was pulled off-line about 1 a.m. Nov. 6 and replaced with a backup. PMI officials said that after the problem was identified as the precinct reporting area of the program, they began deleting that part of the information.

At about 3 a.m., officials said, the primary had been brought back up and was running in parallel to the backup. Later that day, the primary was switched back on-line and finished the tabulating of returns, they said.

The first discrepancy was discovered in North Carolina results about 10 p.m. Nov. 5. Questioning telephone calls began coming in as others were also noted – mainly in the form of inflated precinct numbers, although some vote totals were noticed to be wrong.

177% of the Vote

Among the errors were reports that "177% of the vote" in the South Dakota senatorial race had been counted and that comedian Dick Gregory had a sizable lead in Pennsylvania in the presidential race "with no precincts reporting."

Switching to the backup system did not immediately clear up problems because the backup was about half an hour behind, resulting in news commentators on the air being denied access to any figures for about 45 minutes. The reason for the delay, PMI officials said, was that the backup was not getting any information until the primary system was finished with it rather than having the two systems running in parallel.

End of the Trial

The 12 month trial of punched card balloting with Seiscor voting machines at Newton, Mass. came to an end last week. Election results trailed those of districts using paper ballots by about four hours. The city will now consider whether to purchase the systems which it had rented for the test.

Uaide Considers Divorce, New Life as Independent

By Lynn Yarbrough
CW Correspondent

SAN FRANCISCO – Uaide (Users of Automatic Information Display Equipment) faces a major decision in the year to come, Uaide president-elect Gary Clickard said at the group's annual meeting here.

The question, he said, is whether Uaide should remain a user's group and continue to be supported by Stromberg Datagraphics Inc., or should attempt to stimulate its growth rate, diversity, and professional standing by becoming an independent professional group.

He pointed out that the current situation, in which papers describing implementation of graphic data processing applications on a variety of manufacturers' devices is encouraged, is unique among user's groups.

Some 27 papers and a dozen panel discussions, with topics ranging from management information display systems to computer production of TV program segments, were attended by over 200 participants.

Awards for papers were made to Sherwood Anderson, Syracuse University, $100 ("A List Processing System for Effectively Storing Computer Animated Pictures"); Dan Haflinger, SDI, $50 ("Graphics for Computer Aided Design of Charactron Shaped Beam Tubes"); and William Gaddis, Ling-Temco-Vought, $25 ("The LTV Solids Animation Program").

The presentation of two animation papers was indicative of a strong interest in computer animation which has grown within Uaide. Cooperation began in July, 1967, between the Uaide Computer Animation Committee and the Committee on Computer Animation, Commission on Engineering Education, National Science Foundation. The footage of computer generated movie film presented at the conference occupied some three hours of the meeting.

Time Sharing Approaches Efficiency of Car Engine

HANOVER, N.H. – Time sharing, long attacked as being very inefficient, is nearing the efficiency of the motor car engine, according to the latest figures issued by the Dartmouth consortium. During August the ten schools participating in the National Science Foundation backed experiment used 8723 central processor seconds, while the cumulative connect time of the terminals at the schools amounted to 778 hours, so that on an average it takes 11 seconds of GE 635 time to support a terminal for one hour.

Extended, this appears to give a figure of 300 as the maximum number of terminals which can be powered by the system. The Dartmouth system possesses the current world record in the number of terminals supported on-line at a single time – 113 (without appreciable loss of service). Therefore it can be said that its "engine efficiency" has reached 38%. By contrast, automobile engines have an efficiency of between 40 and 60%.

IBM Again Stresses Costs of Reliability

(Continued from Page 1)

percentage written into government contracts from 90% to 95%, and last month – after a unit by unit study – they increased almost all of the 360 line maintenance costs by up to 20%, while reducing costs for the earlier 7000 and 1400 systems.

NOTICE TO ADVERTISERS

There's still time to let Computerworld sell for you at the Fall Joint.

The monthlies are closed by now, but Computerworld's 2 FJCC issues are still open:

The Preview issue closes Friday, November 29 for space, and Monday, December 2 for copy. It hits the mails Wednesday, December 4.

The Show issue closes Tuesday, December 3 for space, and Thursday, December 5 for copy. It hits the mails Wednesday, December 11.

3000 of each will be distributed at the FJCC from the Computerworld booth, and both will be right up to the minute with the news of the industry.

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Editorials

Thank You Mr. President-Elect

It is not often that a newspaper has a legitimate reason for thanking a President-elect. However, in the case of the 37th President of the United States, this has occurred, and *Computerworld* accordingly thanks him for recognizing a sensible role for computers in our community and for having pointed this out to us in the computer community.

President-elect Richard Nixon passed over the flurry and the fireworks of fantastic numbers like millions or billions of instructions per second, the glamor of magnificent engineering achievements, and selected instead as a critical use of computers to "bring jobs to the people" [CW, Aug. 7 & Sept. 25]. Moreover, he selected it in a way which allows the people to maintain their privacy.

This action provides the answer to the question that was asked by a previous President, when in his inaugural address he said, "Ask not what your country can do for you. Ask what you can do for your country." In his selection of the role in bringing jobs to the people, Nixon has shown us that our real function is in safely widening the role of computers in the service of society rather than emphasizing projects whose prime value is glamor and publicity.

Thank you, Mr. President-elect.

If Gigo Were True!

One of the so-called truths of the computer is Gigo – "Garbage In, Garbage Out." The term is used as a warning to prospective users by computer manufacturers. It is used in addresses to chambers of commerce – and in post-mortems on "computer errors." There is only one problem about it – it simply isn't true!

In fact, improper input can easily be mistaken for correct input by computer systems. Incomplete tests, inadequate error routines, incorrect diagnostics can all result in the creation of seemingly valid output – which is often acted on. Garbage, by contrast, would be immediately recognizable as garbage – and would not be acted on.

Computerworld feels that the sooner the concept of Gigo is dropped from the computer folklore, the sooner we will get our error rates into a more reasonable proportion.

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The New Face of Leasing

In the past month a number of policy decisions by IBM have brought into view some new questions about computer leasing.

These started to become evident in September when IBM Chairman T.J. Watson, Jr. reported to stockholders that he anticipated the volume of third party leasing would drop off substantially because the 360 was no longer new.

This was followed by the announcement that most of the System 360 central processors had been taken out of "new production" by IBM.

Then came the big item. IBM announced a new schedule of maintenance charges. This should not have had any impact on leasing. However, the changes pointed out a major weakness in the current leasing market. Many of the computer leasing firms had contracts with terms which effectively guaranteed no changes in maintenance prices. It is surprising that leasing companies had accepted such contracts when they were aware that IBM's maintenance prices were subject to change without notice.

Luther Schwalm, right, president of MAI, the only leasing firm with computer maintenance capability, discusses a diagnostic printout with CW Editor Alan Taylor, left, and John Potter, president of the Potter Instrument Co.

Other Developments

Concurrently, the true meaning of "local maintenance" became apparent for the first time. Much of the software for the 7000 and 1400 is now under "local maintenance." In the past it was believed that this would not be very different from the type of service provided for ordinary support.

It turns out, however, that a user must rely entirely on the help his local manager cares to give him. IBM's policy is that this is a local matter, and this means that IBM does not guarantee to keep users informed either of bugs or solutions to the bugs that are discovered! It is, as one user pointed out, quite possible to spend a year trying to solve a problem which has actually been solved.

Later Developments

Then came the rollback of maintenance charges. and, the same day, an announcement by a leasing firm, MAI, that it intended to market "extended memory modules for second generation computers."

Last, but by no means least, came the announcement by Boothe Computer that it was no longer purchasing 360s, and finally the announcement by IBM of the 54K USASI Cobols.

It appears that our current leasing contracts in many cases were not properly thought out and problems currently exist in software, software support, and maintenance. All of these should be taken into account by the user prior to entering into leasing contracts.

On Maintenance

The most obvious lesson is that maintenance prices are a problem. It can be argued, of course, that the risk is just as high on rental contracts (where the rental can be increased), and also that the risk lies with the leasing company rather than the user. However, many would-be lessors like to see that both sides of a contract are soundly based financially. Perhaps future contracts will include an escalation clause based on both IBM's *rental* charges, and on its maintenance charges. This would appear to safeguard all sides in the matter.

The software support problem is simply the value, or lack of value, "in local maintenance," if that is all that is going to be available. One of the key criteria in leasing is: how much money is the used system worth? When a customer acquires a new system he may well need full support from the manufacturer.

Earlier this year IBM announced that it would give second users of systems as much support as first users. At that time it looked as though the problem of full support had been cleared up to the advantage of the leasing firms. It now appears that the problem is solved *only* during the time that the software system concerned is on full maintenance from IBM. The problem, however, is one which mainly concerns leasing companies and their clients who rent second hand systems rather than first users.

The software problem is a new one. The USASI Cobol draws attention to the fact that useful programs requiring more core may have an effect on systems which do not have enough core available. If a user of a purchased system (and three party leased systems are purchased ones) wants to upgrade memory, the original system must be traded back to IBM or to the leasing company. It is not currently clear that such exchanges can be guaranteed.

This is different from software requirements for peripherals. Peripherals are purchased or rented separately – core is paid for as part of a processor.

As a result, the provision of software with high core requirements brings up a basic question of the validity of the whole leasing concept. One of the main arguments for leasing is that a computer can now be used for much longer periods than in the past. This is true for a particular processor, only when allowance for core enlargements is made. And, what percentage of machines allow core to be added?

(This particular area may now be getting the attention of the industry. MAI's announcement that it is going to provide additional core facilities for the 1400 series is probably one of the first steps. What will happen in the future is not known. It must also be pointed out that MAI was the only leasing company ready for potential increases in maintenance charges. It has its own maintenance force to maintain its own computers.)

Leasing from a User's Viewpoint

The 1969 user will have to safeguard his systems against these three problems. It would seem worthwhile to double check the contracts – and perhaps the leasing firms – to find out what provisions have been made to support the software and to provide additional memory modules if necessary.

Letters to the Editor

Question of Experience

To the Editor:

A question has arisen about the appropriateness of experience on certain computer equipment and with certain programming languages in qualifying for work with other equipment and languages. In evaluating the experience two specific questions came out:

1. Would an IBM 7080 160K machine be considered a large scale machine? Is experience on it considered to be on a large scale machine?

2. Would experience with IOCS, macro, and decision, arithmetic, and table creating languages be considered to be experience with "higher" level programming languages? Would such experience compare with, for example, experience with Cobol?

Dave Tallis

Springfield, Va.

(1) The 160K 7080 (10 times faster than the 705 – renting at $50K up) is certainly "large scale." (2) Macro use is not normally comparable to the use of high level languages. However, the 7080 Data Gen language (which includes the Fortran-like arithmetic language as well as decision table and table creating languages) is so closely integrated with the 7080 processor which also handles IOCS, etc., that this specific case is borderline, and a case in either direction can be made. CW, however, considers that as they were not integrated

(Continued on Page 5)

Rubey Report-Part III

Salvaging Worthwhile Information From the Report

In our previous articles on the Rubey Report, "Comparative Evaluation of PL/I," we brought out that, in *Computerworld's* opinion, the study results had been made unreliable by the decision to rely on the subjective judgments made by Logicon programmers and analysts on questionnaires in preference to relying on observed data gathered during the comparative testing.

When evidence is taken from a biased source, it is of no great value in evaluating the "good" points brought out in its results. However, it is often extremely valuable in the examination of the "weak" points.

The Rubey Report was slanted in favor of PL/I because of the selection of questions asked on the questionnaires, and it follows that if those questionnaires showed an alleged weakness of PL/I, then the fact that the weakness exists is supported. The questionnaires did, in fact, highlight some weaknesses in three areas – ease of learning, suitability for nonprofessional programmers, and in comparison with Cobol on business applications.

Ease of Learning: 13 of the 14 responses said that PL/I was harder to learn than the comparison languages.

Suitability for Nonprofessional Programmers: nine of the 10 responses related to the two other standard languages (Cobol and Fortran) felt that PL/I was less suitable than the comparison language for the nonprofessional programmer.

Cobol: It appeared that the comparison with Cobol was in a different category than the comparison to Fortran or Jovial.

While these are three important results which can be implied from the Rubey study, they do not appear to be the only lessons to be learned from it. Indeed, it is *Computerworld's* opinion that we can learn from it the important characteristics of languages and where their weaknesses lie.

Starting from the examination of the programmer's time, the study indicates that planning and coding take only a trivial amount of time (Figure 1). The important area, according to the report, is the debugging phase. It follows, therefore, that in evaluating a programming language, we should concentrate on its debugging characteristics. The report follows this up with an excellent section on where errors occur (Figure 2). This shows that the important area is in the data description which, more than any other area, causes bugs. The report also shows that irrespective of the language, data description errors are by far the most numerous.

Comparative PL/I Evaluation

The study gives a good breakdown of the errors found in the PL/I programs and in the comparison language programs. Even when errors not dependent on language are eliminated, PL/I showed a consistently higher number of errors than any of the comparison languages. The report shows that there were 50% more errors. Comparatively it would appear that PL/I was bound to be inferior to the comparison languages from the point of view of programmer productivity.

Hardware Problems?

One sidelight suggests that some of these points are perhaps more concerned with the hardware of the 360 than with the languages. One of the programmers – who reported most favorably on PL/I – spent most of her time debugging the Cobol version. However, in her comments it appears that the reason for this was the problems she had with using the various forms of data required by the 360. She had confusion in converting the BCD format to the display format. This time was reported against Cobol, although it is a hardware dependent characteristic.

Summary

To summarize, we have, in the Rubey Report, evidence that PL/I is more difficult to learn than the comparison languages and that its suitability for nonprofessional programmers is open to question. We notice that the comparison between Cobol and PL/I appears to be in a different category than the comparisons between Jovial and Fortran, and should have been run separately.

The observations in the report show that the important area in programming is debugging and involves both the debugging tools and the error proneness of the language. The data suggests that the data descriptions are, for all languages concerned, a prime cause of errors and should be looked at, and that the use of multiple formats in computer hardware, where this is carried through to software, are major contributors to error proneness.

This ends our study of the Rubey Report – which we again emphasize was one of the best language evaluations conducted to date. Next week we shall talk about when an analyst should choose PL/I rather than other languages.

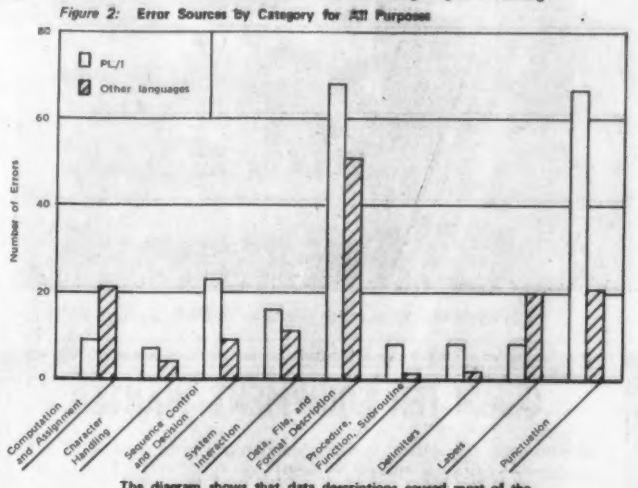
Figure 1: **Programmer Experience and Time Expenditures**

Programmer-Dependent Factors	PL/I : COBOL				PL/I : FORTRAN						PL/I : JOVIAL			
	GROSS PAYROLL		ALOREP2		MMI		TSME		VIG		SPP-A		SPP-A	
	PL/I	*Cobol	*PL/I	Cobol	*PL/I	Fortran	PL/I	Fortran	PL/I	*Other	*PL/I	Other	PL/I	Other
Programmer time (hours)														
Designing	3	2	2.5	1.5	6	2	5	9.5	2	1	10	18	20	14
Coding	13	14	10	16	22	33	45.5	53.5	10	6	35	42	36	26
Debugging	118	60	28	74	70	60.5	43.5	33	14	10	75	120	165	120
Total	134	76	40.5	91.5	98	95.5	94	96	26	17	120	180	221	160

*Indicates language in which first implementation was performed.

The figures show that debugging normally consumed twice as much time as designing and coding the programs.

Figure 2: **Error Sources by Category for All Purposes**



The diagram shows that data descriptions caused most of the errors during the test programming for the Rubey Report.

Letters to the Editor

(Continued from Page 4)

like other accepted "high level" languages, such experience is not comparable with higher level programming languages such as Cobol. Ed.

Rubey Report on PL/I

To the Editor:

I have been following with interest your articles and editorial on the Rubey Report and PL/I. Like many of your readers, I did not find the results of the report particularly surprising, having come to virtually the same conclusions over a year ago after having used PL/I and having taught PL/I. Also, unless my memory is incorrect, many of the conclusions of the Rubey Report were voiced at the first PL/I forum held in August, 1967.

Enclosed is a set of papers published by Massachusetts Computer Associates in April, 1967. These papers may help to explain why PL/I is so difficult to use and teach.

In particular, I call your attention to the definitions of, and distinctions between, professional programmers, non-professional programmers (page 21), and quasi-programmers (page 26). It is my feeling that over 75% of the people programming today are more quasi-programmer than anything else. (I do not like the word "quasi-programmer" and would be happy to hear of a substitute.)

Caral Sampson
Washington, D.C.

Computer Errors

To the Editor:

Thank you for sending me a copy of your article on our "computer error that wasn't a computer error" ["Error Falsely Blamed on Computer," CW, Oct. 9].

Your representation of my remarks was quite accurate, and my feelings of apprehension after you called me to report on our somewhat embarrassing incident were quite unjustified.

R.M. Steinberg
Vice President
Scantlin Electronics, Inc.
New York.

To the Editor:

In reference to your article in the Oct. 9 issue, "Error Falsely Blamed On Computer," did it ever occur to you (or Robert Steinberg) that perhaps the blame for the error should have been placed on the system design rather than a computer operator?

Realizing that hindsight is usually better than foresight, it is never a good practice to allow a computer operator to make options which could be eliminated through good systems design. My sympathy is with the operator. He should never have been placed in a position of having to make such decisions during a run.

Johnnie E. Parker
Battle Creek, Mich.

Professional Programmers

To the Editor:

What is a professional? Who is a professional?

I have been in the data processing field (loosely defined) for over 20 years. I can count on one hand the number of people I've met in that time whom I would classify as professionals.

I cast a jaundiced eye at your articles reporting the activities of various "professional" organizations or societies, and enjoy a hearty laugh over their gymnastics aimed at gaining recognition – proclaiming a "code of ethics," and then showing no interest in putting them to practice.

It becomes an irritating factor, when seeking either programmers or analysts to fill a vacancy, to discover that just about any applicant capable of identifying a code sheet or a flowchart for what it is, immediately proclaims himself to be a professional.

Because they believe themselves to be "professionals," they act with the independence of a doctor established in practice for 50 years.

It would be a pleasant prospect to see your publication make an attempt to put things back in perspective by admitting and pressing the fact that a very, very small minority can possibly find justification in calling themselves professionals, and the *vast* majority are simply well paid employees implementing a powerful management tool for their employers.

J. Tolaro, Jr.
Manager, Data Processing
Olympic National Life
Seattle, Wash.

That's *exactly* what we are regretfully coming to believe as a result of watching the indifference of ACM members to their own society's ethics code. Ed.

Computerworld welcomes comments from its readers on any subject related to information handling and electronic data processing. Letters should be addressed to: Editor, Computerworld, 60 Austin St., Newton, Mass. 02160.

Readers also may call in their letters. Call (617) 527-2711 day or night and your opinions will be recorded.

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(Continued from Page 1)

"However, we do have some pure computer users interested," he said. "One engineering firm wants to use them to let their engineers debug their Quiktran programs at home, or wherever they are, without having to go to a regular terminal.

Tape Recorders

A small incremental magnetic tape recorder can be attached to the back of the terminal, and the user can record data by pressing keys, or reading in the contents of plastic "credit card" style inputs. Each cassette can hold up to 75,000 characters and the data can be transmitted to the computer when a telephone becomes available.

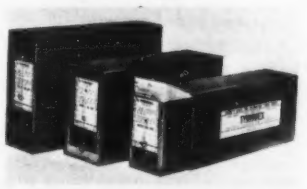
A private code identification module, which EDS says will never be duplicated and which will self-destruct if tampered with, is another available security aid.

New Products

Time Recorder

A new computer usage time recorder, the Dataprinter 101, priced at $925, can be interfaced with any computer and produces a printed record of when and for how long the system is tied up for each program. It will record total job time and actual processing time as well as break down non-productive time into setup time, downtime during the run, and idle time between jobs. Breakdown is obtained by the use of two separate printing timers, one a 24 hour clock and the other a processing time accumulator wired into the computer. Printout is on a standard tab card. The unit will be available Nov. 15. Delivery is 10 days. Rental is $48 per month including service. No lease is required. Datachron Corp., 115 Fifth Ave., New York, N.Y. 10003.

Time Card File



A new pull-drawer file has been designed to file time cards automatically. Several sizes are available for filing and storing any standard time or tabulating card. The capacity of each Tymindex file is 1000 time or 2000 tabulating cards. The units may be purchased empty or with cards included. Weber & Sons, Freehold, N.J. 07728.

Data Coupler

A new $598 acoustic data coupler allows the simultaneous use of a Teletype and an EIA device, such as a mark-sense card reader. In operation, the Model ADC 262 coupler, Teletype, and mark-sense card reader system provide both a keyboard and cards as input sources to a time sharing computer or other data collection point over an ordinary telephone line and provide a printer to record the data transmitted as well as the response received. When on-line, the coupler provides acoustic coupling of the card data from the reader and keyboard entries to the telephone line and, at the same time, a local printout of this data. In the off-line condition, it permits printout of the card data for verification before on-line transmittal. Data rate is 300 baud. Anderson Jacobson, Inc., 2235 Mora Drive, Mountain View, Calif. 94040.

Portable Card Punch

A portable card punch may be used for card makeup in computer rooms or on desk or table tops. The $2200 unit includes two-level card program control, automatic duplication of repetitive data, and automatic skipping of fields not in use. Total optional features are available at $2500, or may be purchased or leased individually, or in any combination required. GMA Computer Corp., 320 Yonkers Ave., Yonkers, N.Y. 10701.

Disk Pack Storage

A new disk pack storage unit, available in two models, has a capacity of twelve 1316 packs or eight 2316 packs. Shelves are adjustable and are embossed to hold the pack securely. Kapko, Inc., 7615 Metro Blvd., Minneapolis, Minn. 55435.

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Do Computers Cut Hospital Costs?

Computers are widely hailed as a solution to skyrocketing hospital costs. CW Assistant Editor Joseph Hanlon investigated many claims of economy and found most of them unsubstantiated – based on guesswork, not statistics. In cases where factual information was available, he concluded that:

1. In a few situations, hospital costs can be cut. But the patient's bill will not be reduced, because costs are rising too fast (8% a year). Computers can, however, hold down the increase.

2. Money can be saved by keeping people out of the hospital altogether, and computers are helping with that through preventive medicine.

His articles on this page illustrate actual and probable savings and examples of computer aided preventive medicine.

Next week; CW will look at several of the newer hospital systems, and will cite a case where computers would have increased costs rather than cut them.

Baptist Hospital Sees 20% Saving With Computers

PHOENIX – "We'll be able to cut the patient's bill 20%, even after taking into account the costs of the computer," declared Blaine M. Lair, administrator at Baptist Hospital here.

"Nursing accounts for up to 40% of the patient cost in a hospital," Lair explained. "As much as half of a nurse's time is spent on paperwork that can be done faster, cheaper, and more accurately by computer."

Medication is a typical example. At the Monmouth Medical Center in New Jersey, a computer has eliminated eight paperwork steps previously done manually. After the doctor writes a prescription, the nurse enters it into the computer. The computer checks to see that the prescription is not an overdose, makes sure that it is not a duplicate order, provides a schedule for the pharmacy, prints the label, adds the prescription to the patient's medical profile, adds it to the patient's bill, adds it to the nurse's hourly medication list, and reminds her if she does not report that it was given.

Several companies offer hospital information systems. Monmouth and Baptist both use Misp (medical information system programs), IBM's hospital information system.

A nurse at Phoenix Baptist Hospital uses the computer to check up on a patient.

Modified by User

Misp contains over 100 hospital information programs in four areas: patient records, scheduling, interdepartmental communicaiton, and accounting and billing. IBM calls Misp a "framework"; the user is required to provide some software, but Misp allows considerable flexibility in tailoring the system to the requirements of a particular hospital.

At Baptist, admission and discharge information systems have been in operation for two months, and laboratory and medication systems have just been added. Installation is expected to be completed by mid-1969. When complete, the system will keep permanent records on all patients, including details of diagnosis, treatment, x-rays, medication, and special diet. The installation at Monmouth is similar to Baptist's, although the admission and discharge program has been in operation there for over a year.

Lair told *Computerworld* that it would be three to five years before the full benefits of the computer would be felt at Baptist, and he admitted that the projected 20% saving would be more than eaten up by other rising costs. But, he said, "We will have substantially lower costs than hospitals without computers."

He also noted that cutting nurses' paperwork allows a nurse to cover more patients, which helps make up for some of the shortage of nurses.

Baptist Hospital is using an IBM 360/40 at Misco., a Phoenix company that eventually hopes to serve hospitals throughout the Southwest.

Automated Hospital Menu Planning Balances Diets, Cuts Costs 25%

KANSAS CITY, Mo. – Menu planning by computer is cutting meal costs by one-fourth at the Research Hospital and Medical Center here.

Jack Bowman, hospital food services director, told *Computerworld* that in September, meal costs per patient per day were cut by 37 cents to $1.04. Bowman said that he expects the hospital to save $7000 per month, *after* taking into account the cost of the computer, which he estimates at $1500 per month.

The Research Hospital and Medical Center has 517 beds and 1100 employees.

Computer Assisted Menu Planning (Camp) was a joint project of the Research Hospital and Medical Center, the Midwest Research Institute in Kansas City, and IBM. St. Luke Hospital in Kansas City will begin using the program soon, Bowman said.

Balancing the Diet

The computer processes data which includes 800 recipes, 700 inventory items, 19 nutritional factors for each of 2500 food stuffs, food costs, and how often a menu item can be repeated.

The dietitian enters the nutrient specifications and the computer calculates the menu, filling the nutrient requirements and minimizing costs. The dietitian can make substitutions in the menu as her judgment dictates.

The cost savings have resulted primarily from cutting raw food costs, according to Bowman, although the system also saves money by cutting waste.

Camp stems from six years of federally funded research at Tulane University. Dean Lawrence, computer sciences manager at Midwest Research Institute, participated in the research at Tulane. The nutrient values used in the program were determined by Tulane, the U.S. Department of Agriculture, and others.

$2 a Day Sliced From Room Fee

BOSTON – Room charges have been cut $2 per day through the use of computers at the Massachusetts Eye and Ear Infirmary here.

Eye and Ear first used the computer to determine the average length of stay for patients with each possible diagnosis, taking into account that each of the 100 doctors connected with the hospital keeps his patients for different lengths of time. This information is used to predict when a patient will go home so that the computer can schedule another to replace him. Patients for elective surgery are scheduled up to two months in advance.

In two years of use, computer scheduling of beds has raised the occupancy rate from 84% to 88%, according to Director Charles T. Wood. He said that this has increased Eye and Ear's income by $225,000 annually, equivalent to $4 per patient per day. This does not take into account the $34,000 per year rental of the computer, according to Wood, because "bed scheduling is merely a byproduct" of the regular uses of the computer.

The $4 saving was passed on to patients in two parts. A rate increase which took effect Oct. 1, 1967 was reduced from $6 per patient per day to $4. Then, in March, 1968, the room charge was actually cut by $2. The rates went up again Oct. 1, 1968, but only by $4, the smallest increase of any hospital in the Boston area, according to Wood.

Eye and Ear has 179 beds. Twenty-seven are saved for emergencies, and the rest are included in the computer scheduling.

Center's 'Assembly Line' Tests Save Patient's Time, Cost Less

DETROIT – Multitest health examinations that would normally take two days in a hospital and cost over $200 are now being done in two hours for as little as $50.

"In a hospital, it costs too much and takes too much time, so tests like these are usually done only on sick people," explained Dr. Jack Kevorkian, medical director of the Check-Up Medical Diagnostic Center here. "Our center is designed for people who think of themselves as healthy. The emphasis is switching to preventive medicine, and we are making available facilities for which there is a vast untapped market." At least seven multitest centers around the country are planned or are now in operation.

"The significant reduction in time is achieved by the use of automatic testing and analyzing equipment and the use of computers for collecting and processing test data," Kevorkian explained.

Tests Are Integrated

Typically, the patient passes through a series of 15 testing stations, each equipped for several tests. Examination time is also reduced by time integrating the many tests and procedures. For example, a patient may be given glucose to drink at station 2 so that at station 12, when the blood sample is taken, the necessary hour has elapsed.

By the time the testing is completed, and before the patient has left the test center, the computer prints out a preliminary analysis, citing any test results which are obviously abnormal. A complete analysis of test results is computed later and sent to the patient's doctor to aid him in diagnosis and treatment.

Tests include electrocardiogram, x-rays, renal photography, visual acuity, lung functions, hearing test, and laboratory analysis of blood and urine. Patients also fill out questionnaires on medical history and current health, and sometimes take psychological tests. This information is also analyzed by computer.

Check-Up is the first private, automated multitest center. It charges $85 and Kevorkian says that the average testing time is 1-1/2 hours. At most automated centers, electrocardiograms are read and interpreted visually, but at Check-Up, this is also done by computer.

One of the first automated multitest centers was set up at the Kaiser Medical Center. They now have two multitest laboratories in operation, each testing 2000 patients per month. The laboratories are primarily for periodic examinations of Kaiser Health Plan members, but nonmembers are examined for $50.

Diseases Detected

76 Blood Tests for Price of 4

BIRMINGHAM, Ala. – Blood tests can sometimes detect chronic diseases 10 years before symptoms appear. Now, 76 tests can be run on one blood sample for just $31, compared to the $7.50 per test usually charged.

The test program was developed by Dr. Albert E. Casey, pathologist at Birmingham Baptist Hospitals. "What hospitals used to do in order to save patients' money was to order one or two tests one day, and, if they didn't show anything, order more." Now test packages can be given to everyone entering a hospital. Tests administered to patients entering the Baptist hospitals here showed that 30% unknowingly had an additional disease or organic malfunction at such an early stage of development that symptoms were not yet evident.

Most of the tests are run for people already in the hospital, according to Casey, but there is an increase in the number of people who get the tests as part of an annual check-up. "Our goal is broad implementation of this test package for large segments of the population," he said. "This will be preventive medicine in the truest sense; early detection of disease will always be more successful than treatment of the disease at advanced stages."

Some of the diseases that can be detected through blood testing before symptoms appear include heart condition, cancer, alcoholism, hyperthyroidism, and gout.

The tests are processed in the laboratory on multichannel analyzers. The test data is then fed to a Univac 418, which calculates test results, analyzes them, and prints its diagnosis. This analysis is then sent to the patient's physician.

The 76 tests are broken into three sets, which cost $14 for one set, $24 for two, or $31 for all three. Dr. Casey's lab does 4000 tests per day. Four other labs in the Birmingham area also do this sort of test and share the computer.

Computer's Place in Society Among the Topics at Nerem

BOSTON – The three day Northeast Electronics Research and Engineering Meeting held here Nov. 6-8, although designed for engineers and technicians, included several papers on the social responsibilities of computers.

C.C. Abt of Abt Associates, Inc. suggested that only computers were equipped to tackle the world's massive social and economic problems.

"From the problems end down, we can decompose them into subproblems that require such massive and rapid data storage, retrieval, and logical processing that only computers offer any hope of coping with the complexities involved," he said. "From the problem solving response end up, we can see applications for operations research techniques using mathematical models that require computers to properly simulate the complexities involved.

"The only remaining viable alternatives to absent theory, impractically pervasive experimentation, and craven nonsolution are simulated experimentation, or simulation of problems and alternative solutions for the sake of developing more predictive and solution-producing theory," he concluded.

An entire session was devoted to the privacy problem. R.M. Fano of MIT discussed "Individuals, Organizations, and Computers"; A.F. Westin of Columbia University took up the data bank problem in "The Data Banks Are Already Here: Privacy Aspects of New Computer Information Systems"; M.R. Irwin of the University of New Hampshire discussed "Computer Based Services and Current Issues in Public Policy"; and P.W. Knaplund of IBM discussed "Safeguarding Computer Data."

Testing and Control

In a session on computerized testing, J.E. Gorman of Western Electric recommended the use of small, general purpose computers in solving testing and control problems. Noting that programs for them can be assembled and tested on larger computers, he cited these advantages over the use of special purpose controllers:

"In deciding upon the control sequences, a set of steps that would be difficult to sequence and specify in a logic diagram is rather easily programmed. Since computing power of a modest sort is available, it is possible to consider modeling the process in a simple way using an equation or two, which would not be reasonable in a wire logic controller.

"Since a computer is a general purpose machine, it is possible to design the sensor and interface modules before or concurrently with the program sequencer design, providing a shortened interval from specification to machine. Additionally, it is possible to allow for correction of errors later with a minimum of hardware redesign."

Faster Teletypes

At the industry exposition, Dial-Data Inc. of Newton, Mass., announced that it was beginning to use the new Bell System Teletypes, which are 50% faster, for its time sharing service. The new units have expanded keyboards with upper and lower case letters and use multicolored ribbons.

In this experimental optical memory system, a laser beam is directed to a holographic plate where the beam is split. Informational light beams emerging from the hologram are directed to a light-sensitive detector array.

Laser Read / Write Unit Uses Holographic Storage

BOSTON – An experimental optical memory system that could lead to computer storage devices a thousand times faster than today's disk and drum storage units was described at the Northeast Electronics Research and Engineering Meeting by an IBM engineer.

In the experimental system, blocks of information are accessed by a laser beam.

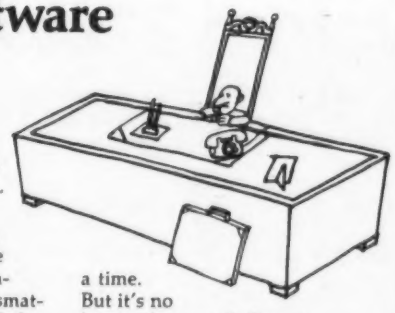
The experimental memory system uses a laser beam to project blocks of information contained on a hologram onto a light-sensitive detector. The detector then converts the projected hologram into electronic signals which can be processed by a computer.

In a feasibility model, assembled at IBM's Poughkeepsie, N.Y., Systems Development Division Laboratory, size, direction, and focus of the laser beam are determined by a series of lenses. The beam is positioned on the hologram by a crystal digital light deflector. By controlling the polarization of the light from the laser, the deflector is used to select any block of information stored on a single plate.

The hologram splits the laser beam into two separate rays: one nonfunctional and the other a first-order diffraction pattern which carries the holographic information. This first-order diffraction pattern is then focused on a light-sensitive detector array, which converts the optical information to electronic signals. The signals, representing the data, are then sent to the computer's central processing unit at high speeds.

Details of the system were described at the meeting by Jerry L. Reynolds in a paper entitled, "An Experimental Optical Memory System." Co-authors of the paper were Rodman S. Schools and Tien Yu Tao.

Instant software company anyone?



Call it Acme Software, All American Software, Worldwide Computer Technology. No matter what you call it, you are part of the rage of the late sixties—the software syndrome. A couple of desks, a smattering of jargon, a rough knowledge of what it's all about, some borrowed money—and you're in business.

Reminds us of the semiconductor spin-off binge of not so long ago. Anybody with a nanosecond's edge on R&D or a new wrinkle in a passivation technique rented a garage and had a go at it.

Some of them made it. More went down the tubes. Not because they didn't have talent and technical knowledge. But for a lot of other reasons that sum up thusly: they failed to convince the market place that they were around to stay. And customers didn't want to take the risk of trusting them with important business.

And that elusive goal of gaining the customer's trust becomes even more difficult to achieve in today's software industry. Customers are getting continuously more sophisticated and enlightened. You can dazzle them with mystique combined with a cheap solution. But before they sign on the dotted line, they're likely to ask some searching questions. Such as—why do you think these cost estimates are realistic? Or—do you really have enough *good* people so that we can count on continuous talent, not just warm bodies? And—will your company be around not only to complete the work but to give us support with the results?

Does the increasingly tough customer attitude mean an end of new company growth in the software field? We doubt it. Freedom to take a risk is what drives many an excellent mind out of the cool, restricted corporate offices into the hot little loft above the candy store. We know that. We did that once upon a time.

But it's no longer the same ball game.

We've seen the software industry grow, change in structure, and grow some more. Getting established in this business was difficult enough six years ago. It is many more times as difficult today. Not only because of the thousands of small competing companies. But because of the performance records of the leaders. You may deem it self-serving, but let's look at our own record:

We've worked on such projects as simulating the moon mission of Surveyer E for Jet Propulsion Laboratories; assisting the Michigan Department of Public Health to implement Project ECHO; implementing an election reporting system for CBS; and launching Atars, the fully automated airline reservation system for travel agents. And many others.

And along the way we've gathered financial strength, management skill, experience, organizational structure. Important customers *can* place their trust in us. And they know it. A few years ago there weren't any firms like ours. And that made it a lot easier to get started.

Today, there's a handful. We tend to think they'll continue to draw the most challenging work and the most demanding customers. And we think they'll continue to offer software talent its best opportunities.

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Second, System 21 is inexpensive enough, small enough, and easy enough to operate to put on the desk of *every* clerk who presently prepares the work sheets from which your keypunch or key/tape operators prepare computer input.

This means data only has to be recorded once — at the point of capture. It can then be automatically translated to punched cards or IBM-compatible tape. By eliminating the keypunch or key/tape operation, time and costs are *cut by more than 50%.*

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Configured as a data input station, System 21 includes a $20-a-month processor delivered with an LSI/MOS microprogram designed especially for computer input applications.

The display shows four eighty-character records. These are called the read, write, master and control records and are identical in function to the four stations on a standard keypunch machine.

The read record shows the previous data record keyed in by the operator. The write record, the item being recorded. The master record holds the format — equivalent to the card program on a keypunch — and the control record holds the instructional sequence.

The write and the master records can be interleaved automatically for "fill-in-the-blanks" input formating. Data is positioned on the video display with the help of an electronic marker or cursor, which automatically marks the spot where the next character will appear. The cursor can be advanced or backspaced to erase unwanted or incorrect information.

Both master and control records can be generated directly from the keyboard or stored on a second VIATAPE cartridge placed in the machine. With System 21 search capabilities, a clerk can call up any one of the 1000 different records stored on the cartridge. This means that she can have all the different personnel, inventory, accounting, marketing and production formats she might need right at her fingertips.

Additional formats can be generated and recorded directly from the keyboard.

Automatic translation of punched cards or IBM-compatible tape

Once data has been recorded on a VIATAPE cartridge it can be automatically translated by other System 21 machines to punched cards or IBM-compatible tape, even transmitted over telephone lines to other System 21 stations or on-line computers. And both the System 21 punched card and magnetic tape translators are *bi-directional.* This means that computer output can be automatically translated to VIATAPE and retrieved at any System 21 station. Hard copies can be obtained with a simple $20-a-month attachment that converts an IBM Selectric typewriter to a printer.

In addition to input/output, the basic $39-a-month System 21 station also provides desk-top data entry, reporting, control, editing, storage, retrieval and transmission capabilities.

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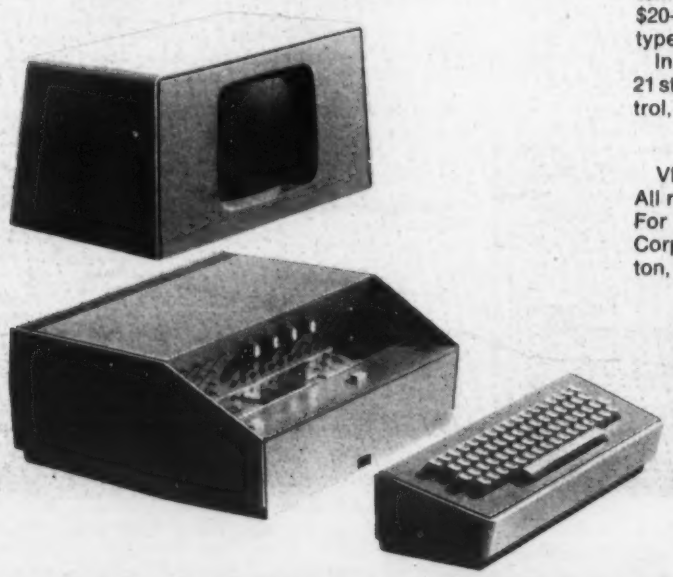
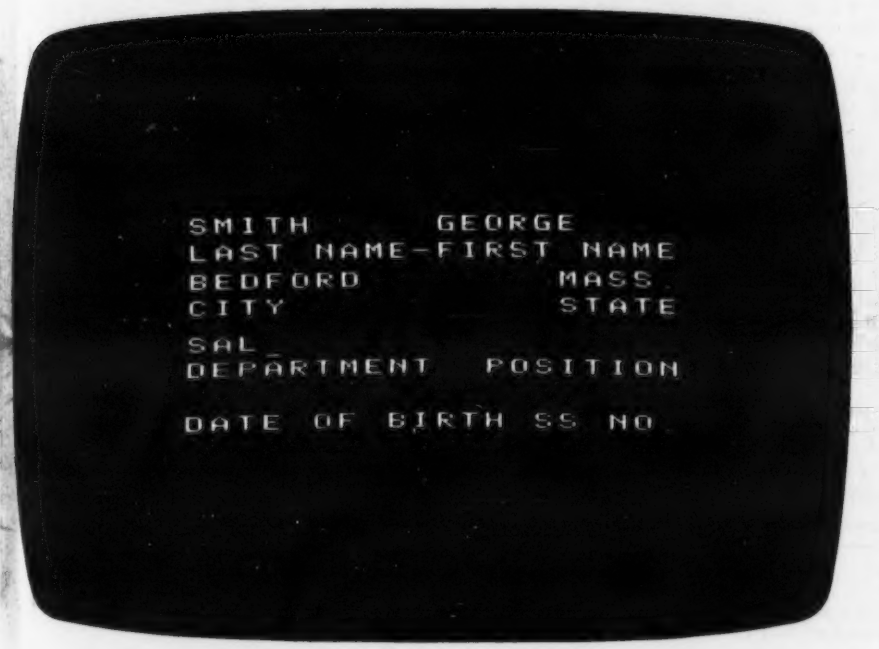
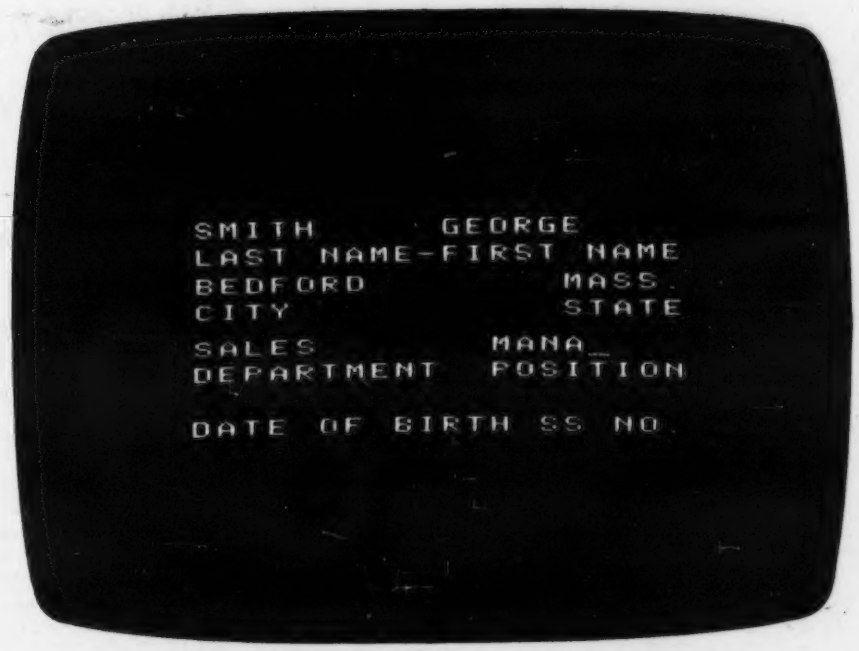
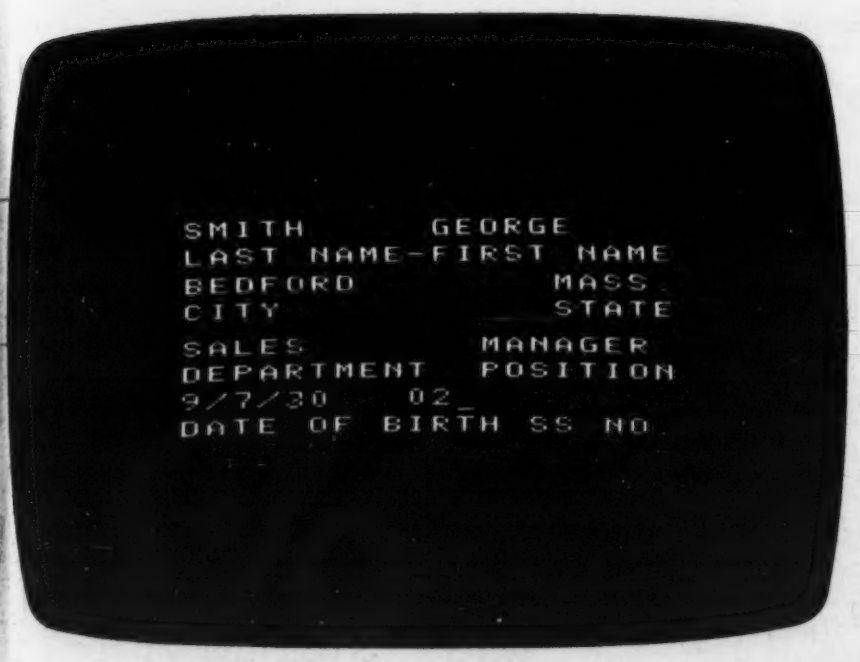


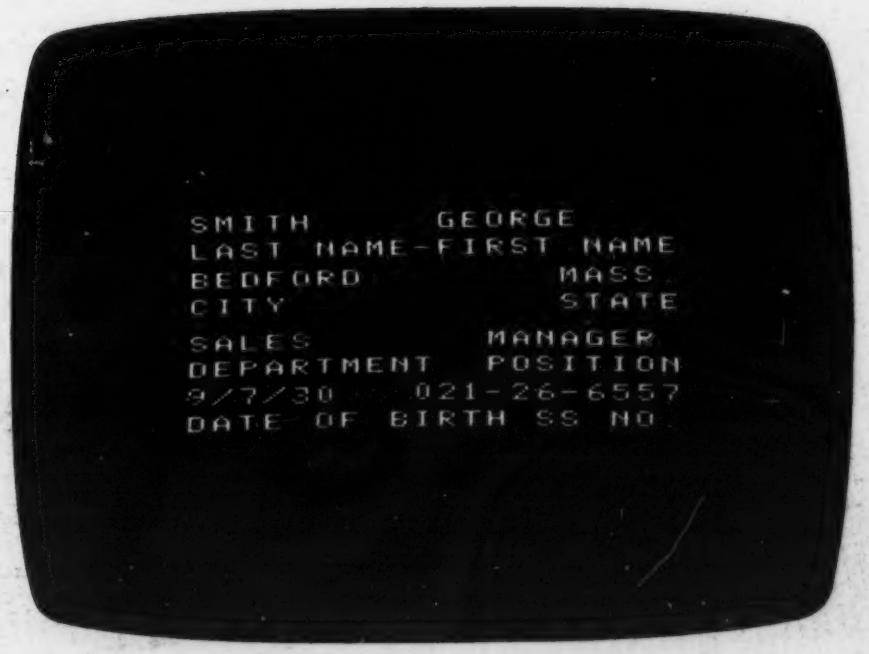
VIATRON

SYSTEM 21









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Xtran Helps Debug, Run Time Sharing Fortran Programs

The Xtran compiler is a one pass compiler which operates on the SDS 940 [see story on page 1]. ComShare claims that it is twice as fast as the standard SDS Fortran compiler in compilation and in object code and that it offers considerable savings in core storage. Line by line editing of programs is available on input, but compilation is basically handled a complete program at a time.

The compiler takes a basically "ad hoc" approach to compilation which ComShare believes to be appropriate for a language with as little structure as Fortran, and includes a macro control description language which allows the addition of new statements quite easily. ComShare believes this is important because time sharing services operate in an environment of rapid change. They have software experts who are then able to access the basic software in central installations and thereby improve performance for all their subscribers.

Time Shared Statements

The additional statements which have been included to suit the time sharing environment include Accept and Display statements which allow an object-time user to access terminals for input and output. These statements are written into the object program in exactly the same way as other Fortran statements but have been changed so that a freer format is acceptable. When an Accept statement is executed, the terminal bell is rung so as to alert the operator user, and the values which are offered can be separated by a space, a comma, or a carriage return so that almost any way which a user might normally react will be understood. The display statement, which can include explanatory words by the use of a string literal, is also a free format operation.

Another facility provides that error interrupts return to the object program, so that they can be handled without disturbing the object program users by involving them with the system executive.

The system provides for easy definition of the type of variables (integer, double precision, complex, etc.) with a "Normal Mode Is" statement. This allows the whole of a computation to be quickly defined without changing the names of the variables and without requiring a separate type of declaration for each variable.

Debugging for Other Systems

Where the system is being used to debug programs which are really to be run on different systems – such as IBM 360s or Control Data 3600s – the procedure is to test the system using the terminal, and then to ring the ComShare operator and tell him to dump the file containing the program onto magnetic tape, and to send it wherever required. If later modifications are expected, a copy of the tape could be stored at the ComShare installation, or alternatively a magnetic tape containing the program could be sent to the installation for loading into the system.

PL/I Autoflow Offered; DOS Version Is Improved

Special to Computerworld

PRINCETON, N.J. – A PL/I version of Autoflow, an automatic flowcharting software system, is now available. It can be leased either as an additional module to one of the other Autoflow programs or as a separate program, according to Applied Data Research, Inc.

The company also announced that a faster version of the Disk Operating System Autoflow programs is available and will be supplied free to current users.

The PL/I Autoflow, which requires 32K and is offered for both the Operating System and DOS, produces, in addition to a flowchart, a series of tables and lists pertinent to PL/I programs, the company said. It can be run only on 360/30s and larger models.

The faster DOS version can produce from 250 to 1000 source statements a minute, depending on the size of the 360, and is available for Cobol, Fortran, PL/I, and assembly language, the company said.

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IFIP-IFAC JOINT CONFERENCE ON PROGRAMMING LANGUAGES. Send letters of intent to Prof. A. Caracciolo DeForino, Institute De Elaborazione Dell'Informazione, Via S.Maria, 46, 56100 Pisa, Italy, with second copy to Dr. E.L. Harder, R&D Center, Westinghouse Electric Corp., Beulah Rd., Pittsburgh, Pa. 15235.

ACM SIXTH ANNUAL DESIGN AUTOMATION WORKSHOP. Submit 3 copies of a 1000 word abstract prior to Jan. 2, 1969, to Dr. H. Reitag, IBM Watson Research Center, P.O. Box 218, Yorktown Heights, N.Y. 10598.

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Participation Offer Ended, Another Made By REI

Special to Computerworld

DALLAS – Recognition Equipment Inc. has terminated an offer of equity participation in its subsidiary, Corporation S, that had been made to three airlines.

Herman L. Philipson, Jr., Recognition Equipment president, said the company plans to file a registration statement with the Securities and Exchange Commission under which it will offer to its stockholders rights to purchase shares of Corporation S common stock at $10 per share on the basis of one share of Corporation S for each 22 shares of Recognition Equipment common stock held.

The offering would reduce Recognition Equipment's ownership from 66.7% to approximately 49% of the outstanding capital shares of Corporation S, he said.

Under this arrangement, Recognition Equipment will sell Electronic Retina computing readers outright to Corporation S, and the two companies will not file consolidated financial statements, Philipson said.

Expansion Planned

Philipson said that Corporation S intends to expand a previously announced computer input automation service throughout the United States and other countries where Recognition Equipment's optical readers are in operation.

The first such Optimation center is scheduled to open here in January. An additional five centers are scheduled to be opened within the next year.

Corporation S said the Electronic Retina can read printed or typed information from documents of intermixed weights and sizes and translate it into computer language. Source documents will be picked up at customer locations and magnetic tape ready for computer processing will be delivered back there, the firm said.

Subscribers pay a fixed unit price for each document processed, Corporation S said.

Stock Conversion

Prior to the rights offering, Recognition Equipment said it will convert up to 250,000 shares of Corporation S Class B stock to common stocks.

Proceeds to Recognition Equipment from the offering will be about $500,000, less expenses, and to Corporation S, about $1.8 million, the firm said. These proceeds, plus a $3 million bank loan to Corporation S and present funds, will provide Corporation S with $10 million in capital to implement the Optimation program, the firm said.

Mohawk Is Told NCR Orders Will Be Down by 10%

Special to Computerworld

HERKIMER, N.Y. – V.E. Johnson, president of Mohawk Data Sciences Corp., has said that the National Cash Register Co. now estimates that its purchase of Data Recorders for the fiscal year ending July 31 will be approximately 10% less than for the previous fiscal year, with the major portion of such decrease occurring in the three months ending Jan. 31.

An announcement Oct. 4 that NCR had asked for a temporary curtailment of recorder deliveries to permit adjustment of its inventories caused Mohawk's stock to drop 12-1/8 points that day to 61-1/2 [CW, Oct. 16].

NCR, which buys 25-30% of Mohawk's recorder output, has a five year marketing agreement with Mohawk under which NCR resells the recorders it buys. In its annual report, Mohawk stated that NCR bought about 2700 units during the fiscal year ended last July 31.

Johnson said NCR indicated that the 10% estimate figure was based on preliminary forecasts under continuing review, and that the figure might be decreased later.

Amex Members Adopt New Fees, Similar to NYSE's, to Begin Dec. 5

NEW YORK – A reduced stock brokerage commission schedule – similar to one recently passed 925-266 by members of the New York Stock Exchange [CW, Nov. 6] – has been passed 316-206 by members of the American Stock Exchange. Both plans take effect Dec. 5.

The new Amex schedule – which includes discounts on public trades over 1000 shares and the abolition of customer directed "give ups" – differs from the new Big Board schedule in commissions that one member broker charges another. The differences were apparently controversial enough to cause the closer vote.

Both plans, interim measures until more permanent schedules can be worked out, were apparently sparked by government pressure. The Justice Department, for example, has suggested that if brokers are willing to give up part of their commissions, it means that they are too high.

While both Amex and NYSE officials have defended the former rate structures and minimum fees in hearings before the Securities and Exchange Commission, several leading economists have testified in favor of negotiated commissions on all trades and the abolition of minimum fees.

Optical Scanning Ships 1st OpScan 288, Lists Plans

NEWTOWN, Pa. – Optical Scanning Corp. has announced the shipment, on Oct. 16, of the first of its $100,000 OpScan 288 optical character reading systems to Dow Jones & Co. for use in subscription fulfillment at the Chicopee Falls, Mass., plant.

Optical Scanning's president, J.W. Busby, said that production of the system, which was nearly two years in research at a cost of about $100,000, is expected to reach two a month shortly. Busby told stockholders at a meeting recently that the 288 system is expected to become the basis for a whole family of OCR systems.

1st Quarter Earnings Up

Busby also told stockholders that earnings for the first fiscal quarter were $178,600 (34 cents a share) on revenue of $2,199,000, compared with earnings of $94,700 (18 cents a share) on revenue of $827,000 in the same period last year.

While Busby declined to predict future earnings or revenues, he pointed to "the existence of departmental operating budget which are targeted for substantial growth in the coming fiscal year."

In addition, the company expected to obtain its first $1 million month in terms of shipments in October, and that the current backlog is equivalent to approximately four months production and consists of 90 optical mark readers and four OpScan 288 readers, he said.

By mid-December, the company hopes to occupy a 66,000 sq. ft. expansion, and will probably break ground for further additions in the coming year, he said.

Future Plans

Busby also disclosed that the firm would soon make its first delivery of an OpScan 70C multiplant communications system. Other new products becoming available soon include a keyboard data entry system and a table-top optical scanner, he said.

Busby said that the company now does about 15% of its business with the federal government, and that in 1969 the company will probably sell about 80% of its volume to leasing companies and customers and retain the remainder for its own rental pool.

Asked about possible mergers or acquisitions, he said that while the company had no firm plans, the company's two main considerations were that mergers or acquisitions be in related fields and that Optical Scanning be the surviving company.

He also disclosed that the company has $3.5 million in cash on hand, and does not comtemplate any need for additional financing in the near future, barring any major undertakings that might seem wise.

7 CW Firms Among 55 in BW Survey

NEW YORK – Seven companies listed in the *Computerworld* stock table were among 40 big industrial companies that reported higher earnings in this year's third quarter than last year's, according to figures published in the Nov. 2 issue of *Business Week*.

No *Computerworld* listed companies were among the 15 firms whose profits were shown down from last year.

But while 40 of the 55 companies showed earnings gains, only 23 showed higher third quarter profits margins, *Business Week* said.

Although U.S. Commerce Department figures for third quarter profits will not be available for a while, *Business Week* estimated that national pretax profits for the third quarter were up at least 15% to around a $93 billion seasonally adjusted annual rate, significantly improved from the $47.6 billion in last year's third quarter and the $50.7 billion in this year's second quarter.

	Profits 3rd qtr. 1968 [Thousands of dollars]	Per cent change vs. 3rd qtr. 1967	Rank	Profits 9 mos. 1968 [Thousands of dollars]	Per cent change vs. 9 mos. 1967	Rank	Profit margins 3rd qtr. 1968	Profit margins 3rd qtr. 1967
Burroughs	$ 7,654	+ 25.2%	11	$ 23,400	+ 22.0%	9	5.1%	4.6%
General Electric	81,307	+ 0.8	38	234,292	— 6.0	33	4.1	4.4
Honeywell	10,972	+ 16.1	20	30,583	+ 21.0	10	3.4	3.6
IBM	234,521	+ 38.5	8	620,695	+ 37.5	5	13.4	12.4
3M	42,700	+ 7.8	29	118,000	+ 9.4	21	11.9	12.3
RCA	38,500	+ 3.2	34	102,000	+ 6.3	31	4.8	4.6
Xerox	29,240	+ 15.5	21	85,462	+ 15.3	12	12.7	13.2

New Registrations

DATAPEX COMPUTER SYSTEMS Corp., 200 Park Ave., New York, a magnetic disk pack leasing company, filed to register 270,000 common shares. Proceeds, at a maximum of $5 per share, intended for equipment. The underwriter is A.T. Brod & Co., 70 Wall St., New York.

GENERAL COMPUTING Corp., 160 West End Ave., New York, a computer service company, filed to register 100,000 common shares. Proceeds, at $5 per share, intended for expansion, debt repayment, and working capital. The underwriter is Philips, Appel & Walden, 111 Broadway, New York.

MICROMATION TECHNOLOGY Corp., 211 N. LaSalle St., Chicago, a computer service company, filed to register 100,000 common shares. Proceeds, at $20 per share, intended for expansion, equipment, and working capital. The underwriter is Ladenburg, Thalmann & Co., 25 Broad St., New York.

COMPUTER INSTALLATIONS Corp., 5514 Caroline St., Houston, a computer leasing company, filed to register 280,000 common shares. Proceeds, at a maximum of $10 per share, intended for debt repayment. The underwriter is Walston & Co., 75 Wall St., New York.

DATATAB, Inc., 315 Park Ave., New York, a computer service company, filed to register 55,000 common shares and 55,000 purchase warrants, to be offered in units of one share and one warrant. Proceeds, at a maximum of $50 per unit, intended for debt repayment, equipment, and working capital. The underwriter is D.H. Blair Securities Corp., 5 Hanover Square, New York.

D.M.C. TELECOMMUNICATIONS, Inc., 155 Lafayette Ave., N. White Plains, N.Y., a computer service company, filed to register 150,000 common shares. Proceeds, at $15 per share, intended for equipment, working capital, and other corporate purposes. The underwriter is Charles Plohn & Co., 200 Park Ave., New York.

DATA MANAGEMENT SERVICES, Inc., 1515 Locust St., Philadelphia, a computer service company, filed to register 270,000 common shares. Proceeds, with the price to be set, intended for working capital. The underwriter is First Investment Planning Co., 1500 Mass. Ave., N.W., Washington, D.C.

Transamerica to Buy Data Products Units

LOS ANGELES – Transamerica Computer Co., Inc. and Data Products Corp. have announced an agreement under which Transamerica will purchase, over a two year period, $25 million in certain equipment that Data Products leases to its end user customers.

The exact equipment involved was not specified.

Computer Design, Nippon Calculating Reach Production, Sales Accords

Special to Computerworld

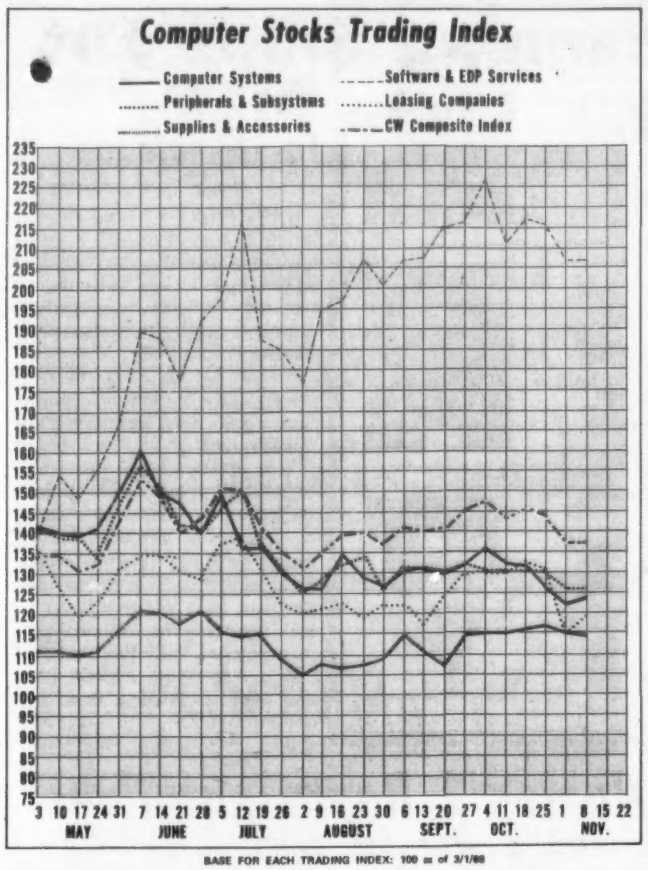
SANTA MONICA, Calif. – Computer Design Corp. and Nippon Calculating Machine Sales Co., Ltd., Tokyo, have reached an agreement for the development of advanced electronic desk calculators.

Although details were not revealed, the new machines are expected to be marketed worldwide by 1970. Elmer R. Easton, president of Computer Design, explained that they would use MOS-Large Scale Integration.

Computer Design will produce the machines to NCMS specifications. NCMS is also expected to produce the machines in Japan.

A new, wholly owned affiliate, Busicom-USA, has been formed as part of the NCMS program for marketing expansion in the United States.

The company has also announced an agreement with the National Cash Register Co. under which NCR will market NCMS electronic desk calculating machines worldwide under its label.


Computer Stocks Trading Index
Computer Systems
Peripherals & Subsystems
Supplies & Accessories
Software & EDP Services
Leasing Companies
CW Composite Index
235 230 225 220 215 210 205 200 195 190 185 180 175 170 165 160 155 150 145 140 135 130 125 120 115 110 105 100 95 90 85 80 75
3 10 17 24 31 7 14 21 28 5 12 19 26 2 9 16 23 30 6 13 20 27 4 11 18 25 1 8 15 22
MAY JUNE JULY AUGUST SEPT. OCT. NOV.

BASE FOR EACH TRADING INDEX: 100 as of 3/1/68

Post-Election Gain Brightens Market

By the CW Financial Staff

The *Computerworld* composite stock average posted its first gain in three weeks, following the election of Richard M. Nixon as President. The average closed at 138, up 1 point (0.73%).

All but one of the major indexes were also up for the week ending Nov. 8. The Dow Jones industrial average rose 10.57 (1.11%) to 958.98. Most of the increase did not come until the Friday following the election, when the Dow Jones gained 8.33, one of its largest daily advances in recent months.

The results of Congressional races probably delayed the response to the Nixon victory. The Republicans gained only four House seats, sharply below the expected number, leaving the Democrats with a 243-192 majority.

The Standard & Poor's industrial average closed at 113.30, up 0.86 (0.76%); the New York Stock Exchange composite average, 58.47, up 0.82 (1.42%); the American Stock Exchange price index, $30.56, up 22 cents (0.72%). The N.Q.B. over-the-counter industrial average closed down 5.08 (1.26%) at 401.00.

Only the Supplies & Accessories sector lost ground, closing at 115, or off 1 point (0.87%). The Leasing sector showed the biggest gain, moving up 4 points (3.48%) to close at 119. The sector had suffered a 16 point loss (12.21%) the previous week. The Peripherals & Subsystems sector closed at 126, up 2 points (1.61%); Computer Systems, 124, up 1 (0.81%); and Software & EDP Services, 207, unchanged.

37 CW Stocks Up

Thirty-seven *Computerworld* listed stocks finished up for the week with 51 closing down and 13 remaining unchanged. The previous week, only 18 were up, while 71 were down, and 12 unchanged.

One *Computerworld* listed stock, Datamation Services, closed at a new high for the year, while another, Computer Applications, set a new low.

Five Make Big Gains

Gains of 10% or more were made by five stocks, four of them from the Peripherals & Subsystems sector. Sanders closed at 55-1/4, up 5-3/4 (11.62%), after the company announced an order for 1000 terminals. Milgo Electronics gained 3 points (12.49%) and closed at 27. Potter Instrument rose 3-3/4 (12.93%) to 32-3/4. Potter's president predicted a sharp gain in results for the current fiscal year, and the company reported receiving an order for 1000 of its data recorders, which it introduced in this country on Nov. 6. Cognitronics gained 6 points (19.05%) during the week, and closed at 37-1/2.

Data Processing Financial & General soared 7-1/2 points Nov. 7 and 11 points Nov. 8, to close at 113, up 20-7/8 (22.62%) for the week. The stock had dropped 17-7/8 in the previous week which saw a major decline in the Leasing sector. The when-issued stock of the company, which has been traded on the exchange since Nov. 7, climbed 5-1/2 to 56-3/4. DPF&G recently reported a 200% increase in earnings for the first quarter ended Aug. 31.

Only one stock, U.S. Time Sharing, lost 10% or more, compared with 19 during the previous week (13 of those were in the Leasing sector). The stock fell 5 points (20.83%) to close at 19. It had remained unchanged the previous week after falling 20% two weeks ago.

COMPUTER STOCKS: TRADING SUMMARY

Week Ended November 8, 1968

EXCHANGE	BASE PRICE 3-1-68	1968 RANGE	CLOSING PRICE	COMPUTER SYSTEMS	WEEK NET CHANGE	WEEK % CHANGE	% CHANGE FROM BASE
NYSE	163 3/8	239—157	220	* Burroughs	— 6	— 2.65	+ 34.66
NYSE	67 3/4	110— 54	59 7/8	Collins Radio	+ 3/8	+ 0.63	— 11.62
NYSE	101 1/2	174— 95	135 5/8	* Control Data	— 1 1/2	— 1.09	+ 33.62
AMSE	102	160— 95	143	* Digital Equipment	+ 2 5/8	+ 1.87	+ 40.20
NYSE	87 1/4	100— 81	95 3/8	General Electric	+ 1 1/4	+ 1.33	+ 9.31
NYSE	60	91— 59	84 1/4	Hewlett-Packard	+ 2 1/2	+ 3.06	+ 40.42
NYSE	93 1/8	144— 89	115	* Honeywell	— 1/4	— 0.22	+ 23.49
NYSE	288 1/2	375—280	315 1/4	* IBM	+ 6 1/4	+ 2.02	+ 9.27
NYSE	103 7/8	153— 40	121 1/2	* National Cash Register	+ 4	+ 3.40	+ 16.97
NYSE	46 7/8	55— 44	48	RCA	+ 1 1/2	+ 3.23	+ 2.40
NYSE	39 1/8	53— 34	45 1/4	Raytheon	+ 2	+ 4.62	+ 15.69
OTC	22 1/2	66— 20	35	* Scientific Controls Corp	— 1	— 2.78	+ 55.55
NYSE	78 3/4	114— 72	83 1/4	* Scientific Data	+ 1 1/2	+ 1.83	+ 5.71
NYSE	45	63— 42	44 3/4	* Sperry Rand	+ 2 3/4	+ 6.55	— 0.56
AMSE	22 1/2	39— 20	27	* Systems Engineering Labs	— 1/4	— 0.92	+ 19.92

EXCHANGE	BASE PRICE 3-1-68	1968 RANGE	CLOSING PRICE	PERIPHERALS & SUBSYSTEMS	WEEK NET CHANGE	WEEK % CHANGE	% CHANGE FROM BASE
NYSE	58 3/8	91— 52	77 1/2	Addressograph-Multigraph	— 1 3/4	— 2.21	+ 32.76
OTC	21	85— 45	50	Alphanumeric	— 1	— 1.96	+ 138.09
NYSE	29	38— 26	34 1/4	Ampex	— 1 1/4	— 3.53	+ 18.10
OTC	17 1/4	27— 14	15	Bolt, Beranek & Newman, Inc.	— 1/4	— 1.66	— 13.05
NYSE	13 1/2	20— 12	15 1/8	Bunker-Ramo	— 3/8	— 2.42	+ 12.04
AMSE	32 1/8	50— 27	36	* Calcomp	+ 2 1/8	+ 6.27	+ 12.06
OTC	24 1/2	49— 20	37 1/2	Cognitronics	+ 6	+ 19.05	+ 53.06
OTC	12	18— 10	14 3/4	Computer Equipment	——	——	+ 22.92
OTC	15 1/4	23— 13	16 1/2	* Data Products	——	——	+ 8.20
OTC	19 1/4	27— 16	17 3/4	* Digitronics	——	——	— 7.79
OTC	39	57— 32	48	* Electronic Memories	——	——	+ 23.08
OTC	10	29— 9	12 3/4	* Fabri-Tek	— 1/4	— 1.92	+ 27.50
OTC	34	35— 14	27	Gerber Scientific	— 2 1/2	— 8.48	— 9.47
OTC	12 1/2	26— 10	21 1/2	Information Displays	— 2 1/4	— 9.47	+ 72.00
AMSE	16 7/8	52— 14	27	Milgo Electronics	+ 3	+ 12.49	+ 59.97
AMSE	57 1/2	108— 54	62 3/4	* Mohawk Data Sciences	+ 1/2	+ 0.80	+ 9.13
OTC	74	145— 71	127	* Optical Scanning Corp.	— 1	— 0.80	+ 71.62
OTC	18	42— 16	32 1/2	Photon	— 1	— 2.99	+ 80.55
AMSE	25 5/8	38— 12	32 3/4	* Potter Instrument	+ 3 3/4	+ 12.93	+ 27.80
OTC	40 1/4	99— 38	81	* Recognition Equipment Corp.	— 1	— 1.22	+ 101.24
AMSE	16	29— 14	21 5/8	Rixon Electronics	— 3/8	— 1.71	+ 35.16
NYSE	46 1/8	66— 42	55 1/4	Sanders	+ 5 3/4	+ 11.62	+ 19.78
OTC	47	155— 53	75	Scan-Data	— 5	— 6.25	+ 59.57
OTC	40 1/2	51— 35	35	* Tally Corp.	——	——	— 13.58
NYSE	242 1/4	321—229	263 3/4	Xerox	+ 2 1/4	+ 0.86	+ 8.87

EXCHANGE	BASE PRICE 3-1-68	1968 RANGE	CLOSING PRICE	SUPPLIES & ACCESSORIES	WEEK NET CHANGE	WEEK % CHANGE	% CHANGE FROM BASE
OTC	48 1/2	64— 37	43 3/4	* Acme Visible	— 1/4	— 0.57	— 9.79
NYSE	20 1/2	32— 18	18 1/2	Adams-Millis	+ 1/4	+ 1.37	— 9.76
OTC	13 5/8	22— 13	20 3/4	* Baltimore Business Forms	— 1	— 4.60	+ 52.29
AMSE	27	44— 21	27 3/4	* Barry Wright	— 5/8	— 2.40	+ 2.78
OTC	31 1/4	40— 26	36 1/2	Data Documents	— 1/2	— 1.35	+ 16.80
OTC	27 1/4	38— 26	37 1/4	* Ennis Business Forms	— 1/4	— 0.67	+ 36.70
NYSE	84 1/8	119— 81	109 1/8	* 3M Company	+ 1 7/8	+ 1.39	+ 29.72
NYSE	58	93— 48	77	* Memorex	+ 2 3/4	+ 3.70	+ 32.73
OTC	27 1/4	32— 25	29	* Moore Business Forms	— 1/8	— 0.47	+ 6.42
NYSE	57 1/4	85— 47	79	Nashua Corp	— 6 3/8	— 7.47	+ 37.99
OTC	31 1/4	56— 40	45	Reynolds & Reynolds	——	——	+ 43.99
OTC	34 1/2	35— 24	27	* Standard Register	— 1 3/4	— 6.09	— 21.74
NYSE	37 3/4	44— 30	34 1/2	* Uarco	+ 3	+ 9.52	— 8.61
AMSE	14 1/4	23— 13	19	Wabash Magnetics	— 1/4	— 1.30	+ 33.33
OTC	25 3/4	36— 24	32	* Wallace Business Forms	— 3/4	— 2.29	+ 24.27

EXCHANGE	BASE PRICE 3-1-68	1968 RANGE	CLOSING PRICE	SOFTWARE & EDP SERVICES	WEEK NET CHANGE	WEEK % CHANGE	% CHANGE FROM BASE
OTC	7 1/2	25— 7	16 1/2	Advanced Computer Techniques	— 1 1/2	— 8.33	+ 120.00
OTC	17	34— 14	34 1/2	* Applied Data Research	+ 1 1/2	+ 4.54	+ 102.94
OTC	15 1/2	23— 13	13	* Aries	— 3/4	— 5.46	— 16.13
AMSE	47	64— 42	61 3/4	Automatic Data Processing	+ 1 3/8	+ 2.28	+ 31.38
OTC	4	19— 4	11 1/2	Automation Sciences	——	——	+ 181.25
OTC	4 1/2	23— 3	15	* Brandon Applied Systems	— 1/2	— 3.30	+ 233.33
AMSE	22 7/8	43— 19	19 5/8	Computer Applications	— 7/8	— 4.28	— 14.21
OTC	5	15— 7	12	Computer Environments	——	——	+ 140.00
OTC	30	64— 24	58	Computer Network	— 5	— 7.94	+ 93.33
AMSE	40	64— 36	55 3/4	* Computer Sciences	+ 2 1/2	+ 4.69	+ 39.37
OTC	39	62— 28	30	* Computer Usage	— 1 1/2	— 4.76	— 23.08
AMSE	36 1/2	73— 36	72 1/2	* Computing & Software	+ 1/2	+ 0.69	+ 98.61
OTC	12 1/2	21— 5	21 1/2	Datamation Services	+ 1 1/2	+ 7.50	+ 71.90
OTC	14 1/2	22— 10	19 1/2	Datatab	— 1 1/2	— 7.14	+ 34.48
OTC	12 1/2	20— 9	10 1/2	* Digitek	— 1/2	— 4.55	— 16.00
AMSE	38 3/8	52— 36	30 1/4	Electronic Computer Prog. Inst.	— 1/4	— 0.83	— 21.18
OTC	35	68— 32	63	* Informatics	——	——	+ 80.00
OTC	21	28— 14	17 1/2	Matrix Corp.	+ 1 1/2	+ 9.37	— 16.67
OTC	11 1/2	69— 8	60	* National Computer Analysts	——	——	+ 421.73
AMSE	31	54— 28	54 1/2	Planning Research	+ 1/2	+ 0.93	+ 75.81
OTC	a13 1/4	a15— 13	14 3/4	Programming & Systems	— 1/2	— 3.28	+ 11.32
OTC	9	15— 8	10 1/2	Software Systems	+ 1/2	+ 5.00	+ 16.66
OTC	a29 1/2	a29— 8	23	Strategic Systems	— 1	— 4.17	— 22.03
OTC	20 1/2	22— 11	12 3/4	TBS Computing Centers, Inc.	+ 1/2	+ 4.08	— 37.81
OTC	a12	a12— 10	10 3/4	United Data Centers	——	——	+ 2.00
OTC	68	165— 57	160	University Computing	+ 9	+ 5.96	+ 153.97
OTC	a20	36— 20	31 3/4	URS Systems Corp.	— 3/4	— 2.31	+ 58.75
OTC	a30	a30— 24	19	U.S. Time-Sharing	— 5	— 20.83	— 36.67

EXCHANGE	BASE PRICE 3-1-68	1968 RANGE	CLOSING PRICE	LEASING COMPANIES	WEEK NET CHANGE	WEEK % CHANGE	% CHANGE FROM BASE
OTC	18	55— 18	49	Boothe Computer	——	——	+ 172.22
OTC	4 1/4	24— 4	14	Computer Exchange	— 1	— 6.67	+ 229.41
AMSE	25 1/8	36— 21	24 1/4	* Computer Leasing	+ 1 1/2	+ 6.69	— 3.48
OTC	12 1/4	19— 11	10 3/4	* Cyber-Tronics	— 3/4	— 6.52	— 12.25
AMSE	106 5/8	184— 88	113	* Data Proc. Financial & General	+ 20 7/8	+ 22.66	+ 5.98
OTC	12 1/2	17— 8	9 1/2	Datronic Rental	+ 1/2	+ 5.55	— 24.01
OTC	20	59— 18	42	Dearborn Computer	——	——	+ 110.00
OTC	13 1/4	19— 12	14 1/4	* DPA, Inc.	+ 1/8	+ 0.88	+ 7.55
AMSE	28 3/4	43— 25	27 3/8	* Greyhound Computer	+ 2	+ 7.88	— 4.78
AMSE	28 1/8	69— 36	43 7/8	Granite Equipment Leasing	— 5/8	— 1.41	+ 56.00
AMSE	49	116— 41	106 7/8	* Leasco	+ 3	+ 2.89	+ 118.11
OTC	5	14— 5	9 1/4	Lectro Computer Leasing	+ 1/4	+ 2.78	+ 84.99
AMSE	30 3/4	66— 27	53 7/8	* Levin-Townsend Computer Corp.	+ 5/8	+ 1.17	+ 75.20
OTC	10 1/2	16— 7	8	* LMC Data, Inc.	——	——	— 23.81
OTC	10 7/8	16— 10	14 1/4	* Management Assistance	+ 7/8	+ 6.54	+ 31.03
AMSE	41 5/8	53— 25	34 3/8	National Equip. Rental	——	——	— 17.42
OTC	13 1/4	14— 8	10 3/4	NCC Leasing	— 1	— 8.51	— 18.87
AMSE	38	64— 35	38 1/4	* Randolph Computer Corp.	— 3/4	— 1.93	+ 0.66
OTC	10 1/2	53— 10	42	System Capital Corp.	+ 2	+ 4.99	+ 400.00
AMSE	10 7/8	23— 10	23 1/4	U.S. Leasing	+ 1 3/4	+ 7.51	+ 113.79

a—Since 10/18/68 *Companies included in Computerworld's stock trading index for each sector.

EDPromotions

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John Hoag	Honeywell Computer Control Div. Framingham, Mass.	Product Manager Industrial Control Systems	Manager Technical Services
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Gene Cumpston	United Data Processing Portland, Ore.	Assistant Marketing Director	Marketing Representative
Robert L. Cantor	National Equipment Rental Ltd. New York	President	Senior Vice President
Michael S. Stumpf	Univac Information Services Div. San Francisco	Manager Information Service Center	Sales Manager

M.S. Stumpf

R.L. Cantor

R.A. Westerhouse

Cost of Errors Increases Need For Simulation

Special to Computerworld

WASHINGTON, D.C. – The potential cost of making a wrong business decision is rising and making it more and more important for businesses to pretest decisions by computer simulation, Robert A. McElroy, vice president of GT&E Data Services Corp., told the National Symposium on Material Handling Flow Systems here.

"One of the unique advantages of simulation by computer is its ability to compress the time of occurrence of projected future events into brief intervals of present time," he said. "Thus simulation can be a positive factor in making decisions, by providing management with the ability to test and evaluate various plans long before making important commitments."

smtwtfs calendar smtwtfs

Nov. 19-21, Washington, D.C. – Course on Project Leadership. Contact: Tom Gildersleeve, Computer Usage Education, 51 Madison Ave., New York, N.Y. 10010.

Nov. 20-22, Boston – Annual Electronics Seminar. Contact: R.J. Mahoney, EDP Committee, American Gas Assn., 605 Third Ave., New York, N.Y. 10016.

Dec. 2-4, New York – Second Conference on Applications of Simulation. Contact: Julian Reitman, Modern-United Aircraft Corp., Norwalk, Conn. 06856.

Dec. 2-4, Chicago – Quality Control Management. Contact: Advanced Management Research, Inc., 1604 Walnut St., Philadelphia, Pa. 19103.

Dec. 9-11, San Francisco – Fall Joint Computer Conference. Contact: Afips, 345 E. 47th St., New York, N.Y. 10017.

Dec. 12-13, Palo Alto, Calif. – Computer Users Group (TUG). Contact: William P. Berry, Philco-Ford Communications and Electronics Div., 3900 Welsh Rd., Willow Grove, Pa.

Dec. 12-14, San Francisco – Fall Digital Equipment Computer Users Society. Contact: Mrs. Angela J. Cossette, Digital Equipment Corp., Maynard, Mass. 01754.

Jan. 22-24, Honolulu, Hawaii – Second Hawaii International Conference on System Sciences. Contact: Norman Abramson, Dept. of Electrical Engineering, 2565 The Mall, University of Hawaii, Honolulu, Hawaii 96822.

+ Under-computerized?

+ Over-powered with DP equipment?

+ How do you compare with the

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Our research staff collected and analyzed statistics on the top 100 computer users among industrial companies in the United States. They operate almost half the computers, in value, used by all the country's industrials. We developed a set of measurement ratios for each company . . . and analyzed computer usage industry by industry. The resulting report, the EDP 100, has an easy-to-use format that can help you compare your company's use of computers with the leaders in your industry. It gives you another guideline in analyzing your company's computer equipment and future plans.

The report, which contains one of the first yardsticks for evaluating a company's level of computerization, is yours for only $8.00. To get your copy, just write us. We'll bill you, if you like.

IDC International Data Corporation
60 Austin Street, Dept. C-1
Newtonville, Massachusetts 02160

Communitype Names 2 Representatives

NEW YORK – Communitype Corp. has named Computer Products Inc., Seattle, and Paul B. Hanson Co. Inc., Honolulu, as representatives. Company President Robert N. King also announced the appointment of Thomas H. Maguire, Jr. to the new position of director of marketing.

New Tymshare Facilities

LOS ALTOS, Calif. – Tymshare, Inc. has opened new computer facilities in Dallas, Seattle, and Newport Beach to expand the company's computer time sharing services.

Computer Applications Adds Four New Divisions

NEW YORK – Information Sciences, Computer Services, Market Research, and Direct Mail Graphic Arts Publishing are the four new divisions recently added by Computer Applications Inc. to expand the company's consulting, analysis, and programming services.

General Computer Services Opens New Office

HUNTSVILLE, Ala. – General Computer Services has opened new offices at 6990 Lake Ellenor Dr., Orlando, Fla. The company, incorporated last December, provides a line of services in the information sciences. Another office is scheduled to be opened in Atlanta in November.

Burroughs to Build Plant in Carlsbad

DETROIT – The Burroughs Corp. has announced plans for construction of a 250,000 sq. ft. plant in Carlsbad, Calif. According to Ray W. Macdonald, company president, the expansion is part of an 11 plant construction program. The Carlsbad plant will engineer and manufacture precision electronic interconnection products ranging from printed circuit boards to flexible conductors and supply interconnection products for commercial, defense, and space computer systems.

Systems Engineering Buys, Plans to Move Facilities

FT. LAUDERDALE, Fla. – Systems Engineering Laboratories has announced it has acquired the printed circuit manufacturing facilities of Spaco, Inc., Huntsville, Ala., and will move Spaco's production equipment here into newly leased facilities. According to A.G. Randolph, SEL president, purchase of the facilities will give an in-plant supply of critical material items. The company manufactures and sells digital computer systems for real time data measurement, processing, and control applications.

Computer Planning Corp. Opens New Office

TORRANCE, Calif. – Computer Planning Corp. has opened an office in the Suburban Trust Bldg., 7515 Annapolis Rd., Hyattsville, Md., to provide programming data reduction services to the federal government. According to Harold F. Jensen, president, it is the first office opened under the company's plan of setting up facilities in principal U.S. cities and foreign countries.

POSITION ANNOUNCEMENTS

Northeast's largest, most advanced computer training organization needs

DIRECTOR OF MARKETING

Must have extensive sales management experience (minimum, 5 years), preferably with computer industry. Position responsible for marketing of current services and new service about to be introduced. Remuneration includes salary and options. Write in confidence to Executive Vice President, care of:

4701

POSITION ANNOUNCEMENTS

PRODUCT MANAGER

to direct

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Must have minimum of three years' EDP marketing experience. Should also have sold to hospitals and be familiar with hospital administrative procedures. Remuneration includes salary and options. Write:

Executive Vice President
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The Manitowoc Company, along with its operating divisions and subsidiaries, has a total employment of over 2,000 and a sales volume in excess of $50 million. Primary products are crawler cranes and shovels.

Qualified candidates will have a minimum of one experience in third generation computers and the ability to work with either COBOL, BAL or PL-1 languages. A degree in engineering, mathematics or business economics is desirable but not essential.

Please send detailed resume along with salary requirements to:

Mr. C.A. Shaw
The Manitowoc Company Inc.
500 South 16th Street
Manitowoc, Wisconsin 54220

All replies will be held in strict confidence.

Income Tax Return Service Is Offered

GREENVALE, N.Y. – An automated income tax processing service, Digitax, has been launched by Coap Systems, Inc.

According to the company, the tax practitioner, through the use of several input sheets, may be said to be finished with his work when these completed sheets are forwarded to the computer service. Once there, the data is translated into machine readable form, processed, and multiple copies of the tax return are printed.

Processing, once requiring up to nine days, is now accomplished in 48 hours and costs for the service have been considerably reduced, the company claims.

Security says its experience with the service, developed for its own operations, stabilizes costs and provides tighter financial control and more meaningful management reports by having customer accounts continually up to date.

Services

Burlington Plans Center

GREENSBORO, N.C. – A time sharing center employing an RCA Spectra 70/46 computer has been scheduled here by Burlington Management Services Co., a division of Burlington Industries, Inc.

Automated Service Bureau Begun by Work Wear Corp.

DETROIT – Work Wear Corp. has announced the opening of Automated Service Bureau, Inc. here to coordinate the computer activities of Work Wear's Midwestern operations and other customers.

Insurance Company Plans To Enter Time Sharing

WINSTON-SALEM, N.C. – Security Life and Trust Co. plans to enter the computer time sharing field early next year with an on-line service for savings and loan associations across a 20 state area.

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CDC to Install a Missile Range System

MINNEAPOLIS, Minn. – The U.S. Army has awarded a $922,000 contract to Control Data Corp. for the installation of a computer system at the Kwajalein Missile Range in the Pacific Ocean to assist in monitoring and evaluating performance of missile programs using the range.

Equipment to be supplied includes a 3300 computer system with special interconnecting equipment, services, program routines, and computational services to weather, flight safety, and business terminals at remote locations. Delivery of all equipment is planned within six months.

CONTRACTS

NASA Contract Awarded

WASHINGTON, D.C. – NASA has selected Technical Information Services Co., a subsidiary of Informatics Inc., to operate the NASA Scientific and Technical Information Facility at College Park, Md. The contract calls for operation of the facility through November, 1969, with an option for extensions for two succeeding one year periods. The facility acquires and organizes worldwide scientific and technical reports in the earth space sciences.

Navy Job Goes to CSC

LOS ANGELES – The U.S. Naval Command Systems Support Activity has awarded a $600,000 contract to Computer Sciences Corp. to develop computer programs to process information on operations, logistics, communications, and personnel for the Military Assistance Command in Vietnam. Under the contract, a staff of systems analysts and computer programmers will be assigned to command headquarters at Tan Son Nhut Air Base.

IDC to Write PDP Basic

SANTA ANA, Calif. – Digital Equipment Corp., Maynard, Mass., has selected Information Development Co. to produce the Basic interpretive programming language for the PDP-8 computer series. Under terms of the contract, Information Development will provide the design and development of a compiler, run time interpretive package, text editor, and command monitor. The systems will be implemented on the PDP-8 computer and interfaced with a time sharing monitor.

CUC to Do DSA Study

WASHINGTON, D.C. – The Defense Supply Agency has awarded a contract to Computer Usage Co., Inc. to perform a system engineering study of the DSA Autodin terminal systems and the digital communications procedures.

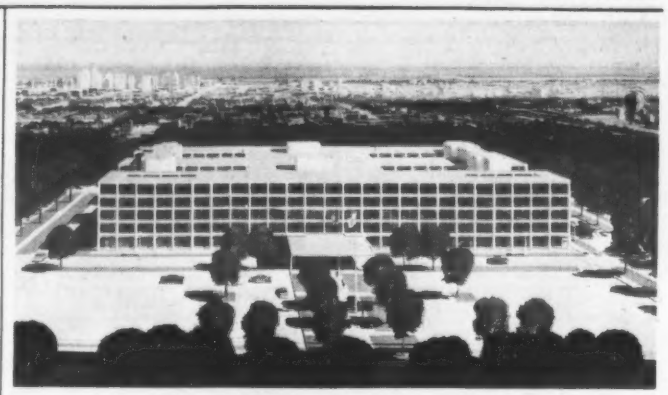
Astrodata Unit Gets Nod

ANAHEIM, Calif. – Centre d'Electronique de l'Armament, a French government research establishment in Rennes, has selected Redifon-Astrodata Ltd., Astrodata Inc.'s U.K. affiliate, to provide an analog hybrid computing system to be used for guided weapons simulation studies. The system will incorporate 174 operational amplifiers, an 8 channel interface unit, and a software package.

EMI Makes Delivery Early

LONDON – The British Ministry of Technology has received the first of a group of data converters from EMI Electronics for installation in the reconnaissance pod of the Harrier P-1127 vertical take-off aircraft. The unit translates analog sensing of the aircraft's position to binary coded decimal form.

Miss Juanita Walker of Delta Data Systems, Inc. in College Park, Md., has been selected Miss DDS by her fellow employees.



Chez Burroughs

Burroughs Corp. is building a five story, $22,800,000 world headquarters building in Detroit. In this architect's sketch, downtown Detroit appears in the background.

Law, Fire Control Systems Planned

Special to Computerworld

SANTA BARBARA, Calif. – Tactical management systems for law enforcement and fire suppression applications are being developed by the new Public Safety Systems Division of General Research Corp.

Conceived along the lines of the large scale command and control systems developed for military applications, the systems keep track of the thousands of items of pertinent information needed for the protection of the public.

Operationally, a dispatch console displays all pertinent facts on receipt of an incoming call for emergency assistance and provides split second suggestions on the most effective deployment of available forces. A central computer's memory bank maintains the necessary data in a series of continually updated files and provides for the complex analysis of response requirement according to the incident type and location, equipment availability, and city status.

Applications Programming Group Formed

ST. PAUL, Minn. – A special marketing group has been formed by the Univac Federal Systems Div. to provide applications programming analysis and services for federal government data processing equipment users.

The new Applications Programming Group, headed by Raymond J. Kot, will operate from already established programming centers.

The group's services are available to nonusers, as well as users, of Univac equipment, the division said.

Management Science Names Jean A. Mori to the Board

ATLANTA – Jean A. Mori has been named to the board of directors of Management Science America, Inc.

Jean A. Mori

Mori, a graduate of Georgia Institute of Technology and Emory University Graduate School of Business, is vice president in charge of the firm's consulting operations and software development.

Computer Packs Unlimited Formed to Lease Disk Packs

CHICAGO – The establishment of a new company, Computer Packs Unlimited, to lease disk packs to computer users, has been announced by David S. Pemberton, president of Computer Processing Unlimited.

In addition to leasing new packs to customers, the company is also offering to buy packs currently in use under a lease back agreement.

Tel-Tech Formed to Make Peripheral Equipment

SILVER SPRING, Md. – A new company, Tel-Tech Corp., has been incorporated here to manufacture data communications peripheral equipment.

The company's first product, for which it has received a contract from TIM, Inc. in Chicago, is a general purpose EDP communications multiplexer that permits up to 38 channels of data to be transmitted over a single voice grade telephone circuit.

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360/20 Acts Like CDC 6500, But It Needs a Little Help

By a CW Staff Writer

HAMMOND, Ind. – A small 360/20 computer, which was all the business office at the Calumet campus of Purdue University could let the Computer Technical Department have, went on the air last week, providing "super computer" facilities for the department, by tying-in to the CDC 6500 at the university's West Lafayette campus. Professor John Maniotes told *Computerworld* that the ability to use the 360/20 as though it was a CDC 6500 would help him in many ways, including improving class instruction and increasing the amount of research that faculty members could perform.

"Our students and faculty henceforth will have access to the same computer facilities on the same priority level as those students at Purdue's main campus," he reported.

Technically, Professor Maniotes pointed out, the arrangement also simplifies the work needed in the computer area. "Systems generation, including control card handling problems, does not have to affect us at the outside campuses," he said. "It can be done once and for all at the center, economizing our efforts."

Software Specially Developed

The software connecting the CDC 6500 and the 360/20 was developed as a master's thesis during the previous academic year. Dr. Maniotes said it appears to be organized very well although there have been occasions when data sets have been lost. "We use one type of data sets here and, of course, they have a different type in the 6500. One has to be transferred to the other, and there have been problems in this area. However, it looks as though things are improving as we get practice in the operation."

IBM & CDC Languages Used

The students learn Report Program Generator (RPG) and Basic Assembly Language (BAL) using the 360/20 as a stand alone computer on the campus. When they need to use Cobol, Fortran, or linear programming and other equivalents, they write in the Control Data languages and the 360/20 is used as a remote job entry system. The turnaround time is as fast as on the main campus, Professor Maniotes said. The CDC 6500 includes 10 peripheral processors and constantly scans the communication lines with the other campuses. When a particular campus system is on the air, it is connected with the 6500 and allocated one of the available peripheral processors which then supervises the transfer of data to and from the system.

More Coming

Currently the Fort Wayne campus, as well as the Calumet campus, is connected to the 6500. Nine other campuses will be connected at the rate of one every two weeks during the next few months.

SDS Line of Slower Peripherals Offers Way to Cut System Cost

LOS ANGELES – SDS has introduced a new line of cheaper peripherals for use with the Sigma systems. A comparatively slow 225 lpm line printer leasing for $500 per month, a 100 cpm card punch ($440 per month) and a 200 cpm card reader ($200 per month) were made available for the whole Sigma line.

SDS said they were designed for applications not requiring the higher input/output speeds provided by the existing peripheral product line and that they could reduce the cost of a total system by over $30,000 when all the new peripherals are used.

They also quoted a low cost Sigma II system capable of operating under the Sigma 2 real-time batch monitor with a multiple level foreground and concurrent background processing as selling for $38,700 and leasing for $3650 per month.

Delivery of the new peripherals is scheduled to begin the third quarter of 1969.

Correction

In the Nov. 13 "Earnings Reports" column, the "year ended June 30" figures listed under Applied Data Research actually should have been listed under Applied Dynamics, Inc. The accidental dropping of a subhead caused both the Applied Data Research and Applied Dynamics figures to appear under the Applied Data Research subhead.

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The full Keymatic Encoder system includes an incremental tape recorder, a basic keyboard topped by a function control panel, a copy holder, and an auxiliary keyboard.

Second Keyboard Makes Inscriber More Flexible

BAY SHORE, L.I., N.Y. – A new keyboard to tape system, which can use two keyboards and a control board to increase its flexibility and which produces indefinite length tape blocks to improve computer reading speed, has been announced by Keymatic Data Systems for early 1969 delivery. Other features of the unit include the ability to write all 256 characters of the 8 bit 360 EBCDIC code (even for systems which have only 7 track tapes) and a software program to convert the coding into the particular computer code being used.

Like an Organ

The full configuration includes a basic keyboard, an auxiliary keyboard, and a function control board which works rather like the stops on an organ. Jack Turchon, Keymatic vice president, explained to *Computerworld* that these were used to make it unnecessary for the actual operator of the equipment to know the software characteristics of the computer involved, or to work from a punching copy prepared by someone who does.

"In typesetting arrangements, for instance," he said, "the editor can just mark the copy with the face desired, say Times Roman, 10 point bold. The operator pushes the Times Roman and 10 point bold function keys, and then types normally on the main keyboard. If she needs some of the graphics, such as bullets or Greek letters which are not among the main keyboard's 102 characters, she can use the auxiliary keyboard to provide whatever other characters she normally uses."

Incremental Tape Recorder

Turchon explained that the system uses an incremental tape recorder which allows for any length block, rather than restricting output to a specific length such as 120 or 240 characters. Seven and 9 track recording models are available. If 7 track is used with a system which requires the full 8 bits per character of the EBCDIC code, each character is recorded on the tape as two parity protected, 4 bit characters which are later translated by the conversion software.

The prices for the units vary from $7900 for the smallest 7 track model with the basic keyboard only, up to $12,800 for the largest 9 track model with all three keyboards.

Institute Plans Comparison Test Of Various Time Sharing Services

Special to Computerworld

LOS ANGELES – A public test of a number of computer time sharing services which, according to Dr. Ernest Schubert, will probably display a variation of 15 to 1 in their performance ratios, has been planned by the National Information Research Institute here.

Dr. Schubert, founder of the institute, told *Computerworld* that the tests would be primarily based on Fortran style programming, although business data processing also could be handled efficiently by time sharing operations.

During the tests a number of systems will be leased at regular rates and under uniform conditions, and their performance for various problems and their diagnostics will be directly compared. It is planned later to have an East Coast workshop.

Dr. Schubert hopes to be able to raise the necessary funds to provide follow-on evaluations of time sharing service for users in the future.

The comparative test which Dr. Schubert is working on will include test cases for compile and execution errors, consideration of the rate structures, and a tabulation of the user's expenses.

No Availability Problems

Some doubt about the availability of some of the time sharing services for the test was cleared up when two of the services not represented (Matrix Corp. and the Service Bureau Corp.'s Quiktran service) told *Computerworld* that they were prepared to make their services available to Dr. Schubert as well as to other people in the Los Angeles area. "We would be foolish to pass up this opportunity for publicity," said the Matrix spokesman. However, the Scientific Data Systems service [illegible] be available during the [illegible] for comparative testi[illegible] bureau of a timing conflict, a [illegible] spokesman told *Computerworld*.

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